This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Box 26-13

TRANSFERRED TO
U OF W LIBRARY

Complete.

THE

SATURDAY MAGAZINE.

VOLUME THE NINETEENTH.

JULY TO DECEMBER.

M.DCCC.XLI.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.

M.DCCC.XLI.

AP+5
'5A2
19

INDEX

TO THE

NAMES AND SUBJECTS IN THE NINETEENTH VOLUME.

Addison, extracts from, 39, 72
Africa, vegetable butter of, 156
——— emigrants' first Sabbath in, 162
Agricultural Chemistry :—
I. On the interchange of crops, 6
II. On the interchange of crops, and on manures, 79
Aimé Martin, remark by, 56
Alison, extract from, 133
Alps after sunset, 133
American Indians, buffalo dance of the, 142
Anacharsis, the Scythian, 104
Ant, example of the, 190
Antioch and its vicinity, 118
Archipelago, the Grecian, and its mariners, 233
Armourer, Thomas Curson, the, 164
Art of deciphering effaced inscriptions on coins, 245
Assistance in resolving doubts, 198
Association of ideas, 178
Astronomy, 22
August, rural sports for, 71
Authority, dependence upon, 245
Authors, old scientific, study of, 16
——— perusal of fine, 190

Banks of the Thames, V., 25—VI., 65—VII., 97—VIII., 145—IX., 185—X., 201
Barbel, the, 93
Basil, 67
Beattie, extract from, 238
Bedawin, honesty of the, 91
Bee, man likened to the, 51
Beet-root Sugar :—
I. Varieties and cultivation of the beet, 23
II Early modes of producing beet-root sugar from the beet, 31
III. Introduction of the manufacture into France, 55
IV. Present mode of preparation in France, 59
Beetles, oil and blistering, 27
Belief in supernatural assistance, 39
Benefits, material, of science, 30
Benevolent feelings, cultivation of, 37
Betel-chewers of the East, 77
Bible, the, 94
Bible and hour-glass, 93
Bicêtre, scene in the, 35
Binocular vision, 163, 189, 220
Birth-day lines, by Mrs. Hemans, 32
Blaze, Bishop, 70
Blessings, diffusion of, 91
Blight, 180
Blindness to our own faults, 77
Blistering beetle, the, 27
Book, silver, of the Gospels, 225
Books, 39, 72
Borage, 68
Bowles, lines by, 98
Brewster, extracts from, 110, 118, 140
Bronze, casting of statues in, 206
Brown, Dr. Thomas, extract from, 70
Brunelleschi, Memoir of, I., 144—II., 179
Buffalo dance of the American Indians, 142
Buffon, extract from, 32
Bulgaria and the Bulgarians, 73
Burke, remark by, 14
Burnett, extract from, 243
Burton, extract from, 200
Butter, vegetable, of Africa, 156

Camel, the, 109
——— and dromedary, 116
Cairo, Sketches of, I., 50—II., 89—III., 106—IV., 130
Canadian foliage, 182
Carlyle, extracts from, 102, 114
Carp, the, 39
Carr, extract from, 39
Cashmere Shawls :
I. The Goat of Cashmere and the native manufacture, 3
II. Attempts to introduce the Cashmere goat and the shawl manufacture into England, 13
Casting of statues in bronze, 206
Castle of Pevensey, 157
——— Warwick, 57
Chalmers, extracts from, 70, 80
Character of "Paradise Lost," 70
——— of Milton's writings, 96
——— judgment of, by children, 152
Charity schools, 195
Chemistry, Agricultural, 6, 79
Chervil, 230
Chess :—
XIII., XIV., XV., XVI., XVII., the Automaton Chess Player, 4, 21, 60, 75, 110
XVIII., XIX., On the Powers of the Pieces and Pawns, 115, 150
XX., Ancient games from which Chess is supposed to have been derived, 165
XXI. Origin of the powers of the pieces, 191
XXII., XXIII., The Knight's Move, 204, 228
XXIV Chess without the Board, 243
Childhood, prayer in, 181
Children of one great Father, 174
——— as judges of character, 152
China :—
XII. Island of Chusan; military occupation; houses and offices of the Chinese, 109
XIII. Island of Chusan; appearance of the country; respect for the dead; Joss houses; Budhists; mandarins, 143
Chinese, their stationary character, 203
Christian minister, office of the, 62
Christianity, infidel testimonies in favour of, 32
Coins, effaced inscriptions on, 245
Coke, Sir Edward, 224
Coleridge, extracts from, 94, 119
Commerce of leeches, 133
Confederacy in virtue, 40
Confidence in the Divine protection, 39
Contemplation, pious, of the works of nature, 80
Copying of celebrated pictures, 187
Cottages of Switzerland, 137
Courts, splendour of, removed, 35
Cowley, extract from, 187
Crabbe, extracts from, 37, 70, 78, 136
Creation, man its masterpiece, 156
Creator, testimony of the creature to the, 37
Credit and metallic currency, 203
Credulity and scepticism defined, 236
Croly, extract from, 93
Crops, on the interchange of, 6, 79
Crowe, extract from, 235
Cultivation of benevolent feelings, 37
Curson, Thomas, the armourer, 164

Dance of the American Indians, 142
Danger and distress, hymn for times of, 114
Dark and light mornings, 227
Davies, extracts from, 22, 24
Dead, the, 192
Dead swallow, 203
Death at sea, 56
——— sudden, 96
Death-bed fortitude, 238
December, rural sports for, 247
Deep research, results of, 140
Dehon, extract from, 91
Deity, omnipotence of the, 51, 96
——— omnipresence of the, 112
Desert, uninvited guests in the, 183
De Tocqueville, extract from, 203
Diffusion of blessings, 91
Diminution of friction, 236
Dissolution of the earth, 196
Division of labour, 168
Dogs, sagacity of, 144
Doubts, assistance in resolving, 198
Dredging, 63
Dresden, account of, 161
Drinking of healths, 131
Dromedary and camel, 110
Drowning, self-preservation from, 37
Durham, extract from, 131
Duty, speculative acquaintance with the rules of, 166

Earth, dissolution of the, 196
East, betel-chewers of the, 77
Economy of marine life, 147
Education, ends of, 245
Egypt, stone quarries of, 182
Emigrants' first Sabbath in Africa, 162
Employment, 78
English Navigators, Old :—
I. Cabot, 10
II. Willoughby, Chancelor, and Burroughs, 199, 235
Entrance into the Tropics, 248
Eventide, 133
Evidences of revelation, 226
Example of the ant, 190

Fables of the ancients, 226
Faith, 119
Fame, 12
Fate of Jezebel, 102
Father Long Legs, 151
Faults, 114
——— blindness to our own, 77
Fearless contemplation of the future, 166
"Fifteen Years ago," 164
Fine Arts, a Brief History of the, I., 41—II., 122—III., 210
First landing in the Western Ind, 184
Floating islands, 241
Florence, Cathedral of S. Maria del Fiore, I., 148—II. 179
Foliage, Canadian, 182
Force and motion, 200
Forbes, extract from, 153
Forster, remark by, 100
Fortitude, death-bed, 238
Fresh-water Fish :—
VI. The Carp, 39
VII. The Barbel, 93
VIII. The Tench, 132
IX. The Gudgeon, 184
Friction, means of diminishing, 237
Friendship, worldly, 156
Fruits of Singapore, 116
Fuegians, account of the, 134
Fuller, extracts from, 55, 164, 227
Future, fearless contemplation of the, 166
Futurity and the present life, 226

Gainsborough and his Works, I., 178—II., 218
Gainsborough's picture of *The Pigs*, 179
Garden Herbs :—
Basil—Borage, 67
Hyssop, 223
Tansey, 230
Gardening, 72
Gauze, wire, 68
Goat, Cashmere, the, 3, 13
God our only hope, 30
Godliness, power of, real, 32
Good manners defined, 55
——— missionary, the, 91
Gospel, the silver book of the, 225
Gratitude, 75
Grey, Lady Jane, translation of lines by, 70
Gudgeon, the, 184
Gurney, extracts, from, 184, 248

Halford, Sir H., remark by, 166
Hall, Capt. Basil, extracts from, 133, 196
——— Robert, extracts from, 166, 190, 203
Hamilton, remark by, 57
Hankinson, lines by, 246
Hasting to be rich, 37
Hawk-moth, the, 101
Healths, drinking of, 131
Heart of man, 206
Heber, Bishop, extract from, 114
Hemans, Mrs., poems by, 12, 32
Honesty of the Bedawin, 91
Honey-dew, 195
Hooker, extract from, 78
Hope, 18
——— God our only, 30
Horeb and Sinai, mounts, 96
Horne, Bishop, extracts from, 51, 156
Horse, Russian's kindness to his, 140
Houses of all Nations, II., 196—III., 249
Human body a world in miniature, 32
——— life likened to the growth of a plant, 94
Hymns, 24, 114
Hyssop, 223

Ideas, association of, 178
Idle objections to established truths, 226
"I have lost a day," 140
Ind, Western, first landing in, 184
Illusions, Optical, IV., 52—V., 95—VI., 141—VII., 163—VIII., 189—IX., 220
Imposture and superstition, 153
India, a steam voyage to, 82
Infidel testimonies in favour of Christianity, 32
Influence of pure religion, 203
Inscriptions on coins, 245
Interchange of crops, 6, 79
Islands, floating, 249

Jesse, extracts from, 144
Jezebel, fate of, 102
Jocelyn, Lord, extracts from his work on China, 109, 143, 221
Johnson, Dr., extracts from, 56, 80, 198, 226, 245
Judicious quotations, value of, 100
July, rural sports for, 119

Kaimes, Lord, extract from, 72
Kindness of the Russian peasant for his horse, 140
King, Capt., his account of the Fuegians, 134
Knight's move at Chess, 204, 220
Knowledge, 248
Knox, extract from, 51

Labyrinths, 53
Landing, first, in the Western Ind, 184
Last look, the, 243
Learning, 14
Leeches, commerce of, 133
Library, the, 200
——— lines on his, by Dr. Southey, 198
Light and dark mornings, 227
Literature, sacred, 230
Lloyd, extract from, 224
Long-legs, father, 151
Luxury, 94
——— progress of, 70

Mackintosh, extracts from, 55
Maintenance of truth, 243
Man, the heart of, 206
——— likened to the bee, 51
——— the masterpiece of creation, 156
Manchoo Tartary, 221
Manna, 93
Manners, good, defined, 55
Manures, on, 79
Maps and Mapping, I., 103—II., 107—III., 116
Marcus Antoninus, remarks by, 39, 93
Marine life, economy of, 147
Mariners of the Grecian Archipelago, 233
Married life, 243
Material benefits of science, 30
Maxim of Marcus Antoninus, 39
Mecca and its inhabitants, account of, 152
Mechanical processes of sculpture, 238
Medina, account of the city of, 197
Melancholy, 70
Melancthon, remark by, 243
Memoir of the late Dr. Thomas Young, I., 139—II., 159
Metallic currency and credit, 203
Milton, writings of, characterised, 96
Minister, officer of the Christian, 72
Montgomery, J., extract from, 192
Montgomery, R., extract from, 96
Months, Rural Sports for the :—
VII. July, 29
VIII. August, 70
IX. September, 119
X. October, 167
XI. November, 207
XII. December, 247
Moralities of life, their mutual dependence, 80
Mornings, light and dark, 227
Moth, the hawk, 101
Mouth organ, or Pandean pipes, 7
Mountain of Sepulchres in Persia, 193
Mounts Horeb and Sinai, application of the names, 96
Motion and force, 200
Mudie, extract from, 147
Murillo and his Works, I., 2—II., 18
Museum, visit to a, 219

Nakshi Roustam, or the Mountain of Sepulchres, 193
Nations, Houses of all, II., 169—III. 249
Nature, pious contemplation of the works of, 80
——— study of, 32
Negligence, 80
Northampton, Lady, lines by, 55
November, rural sports for, 207
Nuremberg, 9

Objections, idle, to established truths, 226
October, rural sports for, 167
Office of the Christian minister, 72
——— of woman, 20
Oil beetle, the, 27

Old English Navigators.—
I. Cabot, 10
II. Willoughby, Chancelor, and Burroughs, 199
Omnipotence of the Deity, 51, 96
Omnipresence of the Deity, 112
Opie, Mrs. extracts from, 112
Opinions, popular, 245
——— preconceived, 236
Optical Illusions, IV., 52—V., 85—VI., 141—VII., 163—VIII., 189—IX., 220
Organ, mouth, the, 7
Ousel, the water, 231

Palmyrenes, 238
Pandean pipes, or mouth organ, 7
Pantograph, the, description of, 70
Paradise, common imagination of, 15
——— Lost, character of, 70
Paris, Dr., extract from, 236
Patagonians, account of the, 99
Patience, 51
Pawns, at Chess, powers of the, 115
Peace, 75
Peg-top, philosophy of a, 19
Perdidi Diem, 140
Permanence of books, 39
Persia, Mountain of Sepulchres in, 193
Perusal of fine authors, 190
Pevensey Castle, 157
Philosophy of a peg top, 19
Pictures, copying of celebrated, 187
Pieces and pawns, at Chess, powers of, 115, 150
Pipes, Pandean, or mouth organ, 7
Plant, human life likened to the growth of a, 94
Pope, probable origin of the doctrine of the supremacy of the, 61
Porteus, Bishop, extracts from, 39, 91
Potter, extract from, 246
Power of real godliness, 32
Powers of pieces and pawns at Chess, 115, 150
Praise, voice of, 238
Prayer in childhood, 181
Preconceived opinions, 236
Present life and futurity, 226
Pringle, extracts from, 91, 169
Processes, mechanical, of sculpture, 238
Profanity, 238
Progress of luxury, 70
Protection, confidence in the Divine, 39
Providence, blessings of, 39
——— reliance on, 68
Pure religion, influence of, 203

Quarries of Egypt, 182
Quotations, value of judicious, 100

Raffles, extract from, 243
Reliance on Providence, 68
Relief, voluntary, of poverty, 227
Religion, influence of pure, 203
Results of deep research, 140
Resurrection, the, 91
Revelation, evidences of, 226
Rich, hasting to be, 37
Richardson, extract from, 70
Robinson, extracts from, 91, 93, 96, 102, 116, 183
Roscoe, extract from, 238
Rural Sports for the Months:—
VII. July, 29
VIII. August, 71
IX. September, 119
X. October, 167
XI. November, 207
XII. December, 247
Russian peasant's kindness to his horse, 140

Sabbath, emigrants' first, in Africa, 162
Sacred literature, 231
Sagacity of dogs, 144
Saxony, Dresden, in, 161
Scene in the Bicêtre, 35
Scepticism and credulity defined, 236
Science, material benefits of, 30
——— use of speculations in, 118
Scientific authors, study of old, 16
Scorpion, the water, 112
Scrope, extracts from, 118, 203
Scythian, Anacharsis, the, 104
Sea, death at, 56
Seeker, extracts from, 77
Self-knowledge, 93
Self-preservation from drowning, 37
September, rural sports for, 119
Shawls, Cashmere, 3, 13
Sherlock, extract from, 245
Shooting stars, 222
Siege-pieces, 92
Silver Book of the Gospels, 225
Sinai and Horeb, application of the names, 96
Singapore, fruits of, 116
Sketches of Cairo, I., 50—II., 89—III., 106—IV., 130
Solitude, 55
Soul and body, union between, 245
Southey, extracts from, 75, 147
Speculations in science, their use, 118
Splendour of courts reproved, 35
Stars, shooting, 222
Statues, casting of bronze, 206
Steam voyage to India, 81
Stone, transport of large masses of, 187
Stone quarries of Egypt, 182
Strong, extract from, 37
Study of nature, 32
——— old scientific authors, 16
Sudden death, 96
Sugar, Beet-root, 28, 31, 55, 59
Supernatural assistance, belief in, 89
Superstition and imposture, 153
Supremacy of the Pope, probable origin of the doctrine, 61
Swallow, the dead, 206
Swimming, 37
Switzerland, cottages of, 137
Sympathy, 246

Talent, true use of, 24
Tansey, 230
Tartary, Manchoo, 221
Taylor, Jeremy, extract from, 206
Teignmouth, Lord, extract from, 226
Tench, the, 132
Testimony of the creature to the Creator, 37
Testimonies, infidel, in favour of Christianity, 32
Thames, Banks of the, V., 25—VI., 65, VII., 97—VIII., 145—IX., 185—X., 201
Thoughts, 102
Thyer, extracts from, 96
Tottie, extract from, 94
Transport of large masses of stone, 187
Triumph, ultimate, of truth, 110
Tropics, entrance into the, 248
True use of talent, 24
——— knowledge, 248
——— wisdom, 243
Truth, ultimate triumph of, 110
——— weight of, 78
Turkey and the Turkish Provinces:—
VI. Wallachia and the Wallachians, 33
VII. Bulgaria and the Bulgarians, 73
VIII. Antioch and its vicinity, 113
IX. Mecca and its inhabitants, 153
X. Medina, 197
XI. The Archipelago and its mariners, 238

Uninvited guests in the desert, 132
Union between soul and body, 245

Value of words, 75
——— judicious quotations, 100
Vegetable butter of Africa, 156
Vice and virtue due appreciation of, 32
Vision, binocular, 163, 183, 220
Visit to a museum, 219
Voice of praise, 238
Voluntary relief of poverty, 227
Voyage, steam, to India, 81

Wallachia and the Wallachians, 33
War, 235
Warwick castle, 57
Watchmaking, 168
Water scorpion, the, 112
Weight of truth, 78
Western Ind, a first landing in the, 184
What is blight? 180
——— honey-dew? 195
——— knowledge? 248
Whewell, extract from, 248
Wilcox, extract from, 51
Wire-gauze, 68
Woman, office of, 20
Words, value of, 75
Worldly friendship, 136

Young, Dr. Thomas, Memoir of, I. 129—II., 189

INDEX TO THE ENGRAVINGS.

Ancient games, figures representing, 165
Antioch, in Syria, 113
Antique head in the British Museum, 125
Aphis Rosæ, 180
Apparatus for diminishing friction, 237
Arabia. Mecca, in, 153
——— Medina, in, 197
Arqua, Petrarch's house at, 176
Automaton Chess-player, 4, 5, 21, 60, 76, 77

Barbel, the, 93
Bearded Bacchus, terminal head of the, 128
Beetles, 29
Beyn-el-Kasreyn, in Cairo, 105
Blighted branch, a, 196
Blistering beetle, 28
Boulac, landing place at, 81
Bridge at Hampton, 97
Britain, Roman coin for, 245
Bulgaria, ruined caravanserai at Hafsa, in, 73

Cairo, views in:—
Beyn-el-Kasreyn, 105
Khan el-Khaleelee, 129
Landing-place at Boulac, 81
Street scene, 49
Turkish effendee writing a memorial, 89
Caravanserai, at Hafsa, 73
Carp, the, 40
Cashmere goats, 13
Castle of Nuremberg, 9
——— Pevensey, 157
——— Warwick, 57
——— Windsor, 25
Cathedral of Florence, 149
Chess-player, automaton, 4, 5, 21, 60, 76, 77
Coin, Roman, for Britain, 245
Colossal Egyptian statue, 44
Colossus, removal of, by the ancient Egyptians, 188
Cottages in Switzerland, 137

Davy's safety lamp, 69
Diagrams of tops, 19, 20
Dredging machine, 64
Dresden, in Saxony, 161

Egyptian colossal statue, 44
English manor-house, 169
Etruscan patera, 45

Father Long-legs, 152
Figures representing ancient games 165
Floating Islands, Lake of the, 241
Florence, cathedral of, 149
Fortune, goddess of, 121
Friction, apparatus for diminishing, 237

Gainsborough, pictures by, 177, 217
Games, ancient, figures representing, 163
Goats, Cashmere, 13
Goddess of Fortune, 121
Grenada, in Spain, 173
Gudgeon, the, 184

Hafsa, ruined caravanserai, at, 73
Hampton bridge at, 97
——— court, 145
Harem, an Indian, 256
High Priest of the Magians, 194
House, interior of an Oriental, 249
——— old English manor, 169
——— of Petrarch, at Arqua, 176

Illusions, Optical, illustrations of, 53, 96, 141, 142, 163, 164, 189, 190
Illustrations of Map-making, 106, 109, 116, 117, 118
——— of the Knight's move at Chess, 204, 205
Indian harem, 256
——— mountain dwelling, 253
Italy, Petrarch's house at Arqua, in, 176

Khan-el Khaleelee, Cairo, 129
Kingston-on-Thames, 185

Lake of the Floating Islands, 241
Lamp, Davy's safety, 69
Landing-place at Boulac, 81
Long-legs, Father, 152
Loom, wire-gauze, 68

Machine for spoon-dredging, 64
Magian high-priest, 194
Manor house, old English, 169
Map-making, illustrations of, 106, 109, 116, 117, 118
Market-cart, from a picture by Gainsborough, 217
Mecca, street in, 153
Milk-girl, from a picture by Gainsborough, 177
Moldavia, travelling post in, 33
Mountain of Sepulchres, in Persia, 193
Mouth-organ, or Pan's pipes, 8
Murillo, pictures, by, 1, 17

Nakshi-Roustam, or the Mountain of Sepulchres, 193
Nuremberg, castle of, 9

Oil beetle, 28
Old English manor house, 169
Optical Illusions, illustrations of, 53, 96, 141, 142, 163, 164, 189, 190
Oriental house, interior of an, 249

Pan, termival figure of, 41
Pan's pipes, 8
Pantograph, the, 15, 16
Partridges, 120
Patera, Etruscan, 45
Persia, Mountain of Sepulchres, in, 193
Petrarch's house at Arqua, 176
Pevensey Castle, 157
Phocion, statue of, 41
Phytolacca decandra, 224
Pointer and Setter, 29
Pompeii, Roman painting from, 239

Red Grouse, 72
Removal of a Colossus by the ancient Egyptians, 188
Richmond hill, view of the Thames from, 201
Roman coin for Britain, 245
——— painting, from Pompeii, 239
Ruined caravanserai at Hafsa, 73

Saxony, Dresden, in, 161
Scorpion, the water, 112
Setter and pointer, 29
Siege pieces, 92, 93
Snipe, the, 208
Spain, Grenada in, 173
Spanish Flower-girl, from Murillo, 1
——— Tinker, from Murillo, 17
Sphinx Nerium, 101
Spoon-dredging machine, 64
Staines' stone, 65,
Statue, colossal Egyptian, 44
——— of Phocion, 41
Street scene in Cairo, 49
——— in Mecca, 153
Suez, view of, 98
Swiss cottages, 137
Syria, Antioch, in, 116

Tench, the, 132
Terminal figure of Pan, 41
——— head of the bearded Bacchus, 128
Thames, views on the banks of the, 25, 65, 97, 145, 185, 201
Tinker, Spanish, from Murillo, 17
Tops, diagrams of, 19, 20
Travelling post in Moldavia and Wallachia, 33
Turkish effendee writing a memorial, 89

Victory, from a Roman painting found at Pompeii, 209

Wallachian post carriage, 33
Warwick Castle, 57
Water scorpion, the, 112
Windsor Castle, 25
Wire-gauze loom, 68

Zebu, the, 36

THE

Saturday Magazine.

No. 578. JULY 3RD, 1841. {PRICE ONE PENNY.

THE SPANISH FLOWER GIRL, FROM MURILLO.

MURILLO AND HIS WORKS. I.

IF it be true that painters portray themselves in their works, if their paintings exhibit their own genius, their propensities, affections, and the dispositions of their minds, the works of MURILLO bear a great analogy to his virtues, and the gentleness of his character. That a man of genius should be insensible to those allurements which so greatly affect vulgar minds ought not to excite surprise,—we ought rather to be surprised when a great mind displays the qualities of a mean and narrow capacity. Believing, as we do, in the purifying influence of intellectual exertion, it is cheering to point out the examples which so frequently occur of greatness united to goodness. These qualities ought ever to accompany each other and form the rule, the exceptions to which ought rather to be regarded as accidents insufficient to cast a slur upon the exertions of intellect. We have recently sketched the life of SALVATOR ROSA in which genius and frailty were strangely mingled—a life in which the misery resulting from the gratification of capricious passion was acutely felt. We have also been delighted in the contrast presented by the amiable and accomplished CANOVA, and we now propose to invite attention to the life and works of an artist whose conduct in both has earned for him the title of "the tender and the natural MURILLO."

Bartolomeo Esteban Murillo was born at Seville in 1618. He was descended from an ancient family, who had formerly held ample possessions in the province of Andalusia. Don Juan del Castillo a painter of some celebrity, was his uncle, and had established an academy at Seville which enjoyed considerable reputation.

In common with most persons who have attained eminence in any pursuit, Murillo gave very early indications of the natural bent of his genius. As a child he was constantly filling the margins of his school books, the walls, and whatever paper came into his hands, with drawings. It is not always that parents appreciate justly these promptings of nature, but in the present instance, the parents of Murillo fostered the genius of their child, taught him to read and write, and then took him to the gallery of his uncle Juan to be instructed in the painter's art. Castillo was in high estimation in Seville, being a good designer, although hard and unpleasing in his colouring. The boy was gentle and docile, and soon won the affection of his relative, who led him on slowly and surely in the principles of his art; nor did he leave his pupil ignorant of the mechanical departments—he made him mix his own colours—clean his own brushes—dispose his pallet, and prepare his canvass.

So well did Murillo profit by the instructions of Castillo that in a few years he exhausted all the acquirements of that master. He then painted two pictures, the one in the cloister of the Convent de Regina, representing the Virgin and San Francisco; and the other in another convent, the subject being Our Lady of Rosario with Santo Domingo. The manner of Castillo is discernible in both.

About this time Castillo removed to Cadiz, leaving Murillo without a master and without occupation. He was so poor that being one day in the kitchen of a convent, the cook said, "Murillo, you are so expert, pray do paint something for me." Murillo replied, "I have no canvass, and what is worse, have no money to buy any." The cook held his dish-cloth, Murillo took it and painted the head of Christ upon it, in a beautiful and finished style.

The poverty of our artist compelled him to seek the Feria* in order to paint whatever subjects were ordered of him. Here he continued for some time engaged in supplying wares to this market of Romish saints, and considerably improved his readiness to invent, to draw, and to dispose and arrange any given subject.

After spending a few years in this way, and in private study, a circumstance occurred which had great influence on the mind of Murillo. One of his fellow scholars, Pedro de Moya, influenced by a strong desire to travel in foreign countries, had abandoned the school of Castillo, and gone to Flanders as a private soldier, but happening to see many of the pictures of Vandyck, all his love for his former profession returned, and he was most anxious to become a pupil of that celebrated master. Moya accordingly went to London, where Vandyck resided, became his pupil, and soon succeeded in working in the style of his master; but his improvement was checked by the death of Vandyck, and Moya returned to Spain. Murillo saw, and was surprised at that chaste, and to him hitherto unknown manner, which Moya had acquired, and became anxious to visit Flanders or Italy, in order to obtain the same advantages. But his pecuniary means were very limited,—he was without friends and patrons,—men of greater name or pretension had hitherto stood between him and reputation. But he worked diligently for a short time, and produced several works, which he sold at the Feria, and, without communicating his intentions to any one, he quitted Seville for Italy in the twenty-fourth year of his age.

When Murillo arrived at Madrid he visited his countryman, Don Diego Velasquez de Silva, first painter of the camera to the King, with whom he was not acquainted except by fame, and requested of him letters of introduction to Rome. Velasquez, pleased with the mild and gentle demeanour of Murillo, inquired of him about his connections and family,—of his school and his master,—and the motives which induced him to quit his country, and undertake so distant a journey. Murillo replied with so much ingenuousness that Velasquez was charmed with him,—told him to stay where he was,—to consider Velasquez as his friend, and that house as his home.

Murillo gratefully accepted the generous offer of Velasquez, and proved himself worthy of this liberality by diligent study, and consequent improvement. He copied some paintings of Vandyck, of Ribera, and of Velasquez. These copies Velasquez presented to the king, and they were applauded by all the nobility and connoisseurs of the court. The judicious choice of Murillo was also approved, in selecting three masters celebrated, the one for his exquisite colouring, the other for his perfection in the claro obscuro, and the third for the spirit as well as truth to be seen in his productions; and Murillo was advised to copy no other masters, because these would enable him to attain a good tone of colouring, a facility of handling, and a greater freedom in drawing.

The rapid progress of Murillo surprised his patron, who, after the lapse of about two years, told our artist that he was now qualified to undertake the journey to Rome, and offered him letters of recommendation and other advantages from the King; but, whether actuated by the entreaties of his sister, or that he considered the object attained for which he left Seville, Murillo declined these advantageous offers, and excusing himself in very

* *La Feria* is a name given to a quarter of the parish of Omnium Sanctorum (All Saints) where every Thursday there is held a sale of old and new furniture, second-hand clothes, and numberless articles of cheap purchase. The inhabitants of this district are mostly artists and mechanics, who provide nearly all Andalusia with their productions; especially with pictures, painted generally in so bad a style that every badly-painted picture is named proverbially *Pintura de Feria*. These pictures were formerly executed with so much promptitude, that it happened sometimes that a scripture-piece or a saint which the devout buyer had desired has been painted while the price was being adjusted; or they have transformed, for example, the representation of a Saint Onofre into a Saint Christopher; or the Virgin del Carmen into a Saint Anthony of Padua. The traffic in this sort of pictures, and the speedy execution of them, was formerly very great when the demand for them was large in the Spanish colonies of South America. At that time this description of art was much better executed than in our own days; for many professors having no employment, applied to the freighters to the colonies, who never failed to occupy them, and paid them in proportion to the ability displayed.

We quote this information on the authority of the Spanish writer Cean Bermudez, who has contributed much that is interesting to the biography of Murillo. The biographical notices of this artist collected by Captain Edward Davies will be found interesting.

respectful terms, he acquainted his master and benefactor with his desire to return to Seville. Velasquez regretted this resolution, because he foresaw the high degree of perfection to which Murillo's genius in the art of painting was capable of attaining at Rome, but he did not interfere with his design, and Murillo returned to Seville, in the year 1645.

About this time a proposal was made to adorn the small cloister of the convent of St. Francis, at Seville, with eleven historical pictures, the figures of the full size; but the proposed remuneration was scanty, it being the result of small collections made from the members of the convent, and amounting to so small a sum that all the painters of Seville refused to paint pictures at so mean a price. Murillo, however, who had a reputation to acquire, undertook the work, and his services were accepted simply because those of no other painter were to be had.

The subjects of these pictures were chiefly from the Romish legends, and need not be described. As works of art their character is very high. Murillo worked at them with care and diligence, and the distrust of his employers was gradually converted into the most hearty gratification and delight. But the astonishment of the artists and connoisseurs of Seville knew no bounds; here were eleven fine pictures, arranged and executed without the knowledge of any one of these "directors of the public taste," and by an artist whom no one had heard of: suffice it to say that in a short time Murillo was acknowledged as the chief of the Sevillian school, because the genius of the painter enabled him to appeal to the feelings and affections of our common nature, by presenting truth in all her simple purity.

Murillo now became celebrated: the great, the powerful, and amateurs in art courted his intimacy, and desired to be painted by him. His rising talents procured him an introduction to Doña Beatriz de Cabrera y Solo Mayor, a lady of distinction and fortune at Pilas, to whom he was married in the year 1648. Murillo now became one of the most distinguished citizens of Seville, and his house was the resort of persons of influence, of taste, and talent in the arts.

The frontispiece to our present article is copied from a picture in the Dulwich Gallery, which is commended by Dr. Waagen in the following terms:—"A girl, with great simplicity of expression, holds some roses in her handkerchief,—a choice example of the very peculiar contrasts and accords of colours by which many of Murillo's pictures have such a magical effect. The background a landscape."

CASHMERE SHAWLS.

I.

The Goat of Cashmere, and the Native Manufacture.

Cashmere has been celebrated from very early periods, for the beauty of its situation, the comeliness of its inhabitants, and the products obtained thence. It is the name both of a country and the capital city therein. The country is a fertile valley, entirely inclosed by lofty mountains, in the north-west extremity of India. The countries which surround it are those of the Seiks, of the Afghans, of the Tibetians, and of the Chinese Tartars. It appears in early ages to have had Hindoo sovereigns, but to have been conquered by a Mohammedan usurper about five or six hundred years ago. The next conqueror was the Mogul emperor of Hindostan, Humayoon, in whose family the sovereignty remained till the rise of the powerful Afghan dynasty in the last century, when Cashmere became a province of Afghanistan. During the present century, when the contests of rival claimants to the Afghan crown had reduced the monarchy to a shadow, Runjeet Singh, the powerful chief of the Seiks, seized Cashmere; and we believe that it still remains under the sovereignty of his successor.

Throughout this series of changes, Cashmere appears to have been highly valued, on account of the large revenue derivable from its produce. The city of Cashmere is very large, containing nearly two hundred thousand inhabitants; but the feature for which the valley has been prized is the great productiveness of the soil, and also the productive industry of the inhabitants. The Cashmerians have become celebrated, not only throughout Asia, but in Europe likewise, for the beautiful *shawls* which they produce. At the time when the Honourable Mountstuart Elphinstone visited the Afghan dominions, Cashmere was considered to possess sixteen thousand shawl-looms, each giving employment to three men. A recent writer in the *Encyclopædia Britannica* remarks:—"For a long period the district of Cashmere, a province of Hindostan, formerly subject to the King of Candahar (Caubul), produced articles of this description in such perfection as to make them highly prized both in Europe and Asia. The date at which this manufacture took its rise is not known; but ever since the British established themselves in India, Cashmere shawls have been considered one of the most valuable manufactures of the East. These shawls are made both long and square, the former measuring generally fifty-four inches wide and a hundred and twenty-six long; the latter are from sixty-three to seventy-two inches square. The finest of them are composed of a material exquisitely soft and warm, surpassing in this respect probably any other material that has ever been fabricated into clothing." From the observations of Bernier, Strachey, and other writers, we gather the following particulars respecting the mode of manufacturing the shawls, as well as the general arrangements connected with the manufacture, in Cashmere.

It appears that the shops occupied by the shawl makers consist of a frame-work, at which the persons employed sit on a bench. The number employed on one shawl is two, three, or four; generally three. On plain shawls two persons only are employed, the weaving being effected with a long, narrow, and heavy shuttle; but those shawls of which the pattern is variegated are worked with wooden needles instead of a shuttle, there being a separate needle for the thread of each colour. The operations are consequently slow, proportionate to the quantity of work which the pattern may require. It is not unusual for a shop to be occupied with the manufacture of one single shawl for a whole year, if it be a remarkably fine one; and, in those which are most elaborately worked, not one quarter of an inch is completed in one day by three persons. Sometimes, in order to expedite the production of a shawl, it is made in separate pieces at different looms, and the worked pieces are afterwards sewed together.

The Oostand, or head workman at each loom, superintends the operation on the shawl, while the other persons are employed near him immediately under his direction. Should the pattern which is about to be worked in the shawl be new, or one with which the workmen are not familiar, the Oostand directs them as to the figures, colours, and threads, which they must employ; keeping before him a paper pattern of the device which is to be produced. During the operation of making, the rough or inferior side of the shawl is uppermost on the frame, or nearest the eye; notwithstanding which, the Oostand preserves the pattern with the utmost accuracy. The mode of operation in this respect seems to bear considerable resemblance to the mode of producing tapestry in the old times, when the rooms of the noble and the wealthy were hung with that production instead of with painted or printed paper.

A merchant who enters largely into the traffic in shawls, frequ ntly engages a number of shops, situated near one spot, where he employs men to work for him;

or else he supplies the Oostands or head workmen with thread which has been previously spun by women and afterwards dyed, and they carry on the manufacture at their own houses, having previously received instructions from the merchant respecting the quality of the goods he may require, their colours, patterns, &c. Under such circumstances, the employer finding all the materials, an Oostand receives from six to eight *pice* per day as wages, and a common workman from one to four *pice*,—a *pice* being a small coin in Cashmere, worth about three half-pence English money. After the shawls are completed, the merchant sends them to the custom-office, where each shawl is stamped; and he there pays a certain duty, the amount of which varies with the quality and value of the shawl. The duty is reckoned at one-fifth of their value; but the government-officers generally manage to fix the value at more than the goods are really worth, for the purpose of increasing the per-centage payable into the treasury of the state. In most Eastern countries, where a province is governed by a pacha, a satrap, a zemindar, or other vice-regal personage, the amount of duty levied on merchants and traders is too often left at the mercy of the governor, who seldom fails to appropriate a portion to his own private use.

The wool of which the Cashmere shawls are made is imported principally from Tibet and Tartary, in which countries the kind of goat which produces this wool thrives better than in most others. That which is brought from Rodauk is deemed the best, its price in Cashmere being from ten to twenty rupees for a *turruk* of twelve pounds. It is to the peculiar beauty and fine texture of this wool that the Cashmere shawls owe the high estimation in which they are held. The wool forms the inner coat with which the goat is covered; and the dark gray colour which belongs to it in a natural state, is removed from it by a bleaching process to which it is subjected in Cashmere, and which is effected principally by a preparation of rice-flour. When this bleaching has been completed, the wool is spun into yarn, and dyed of various colours. The weaving then proceeds, in the frames of which we have before spoken; and, after being woven, the piece is washed once; and the border, in which is displayed a variety of figures and colours, is attached to the shawls in so dextrous a manner that the junction can scarcely be detected. The price varies, under ordinary circumstances, from a sum equal to about ten shillings English, up to fifty; but when the flowered work is unusually elaborate, the price is increased to five or six pounds. This rate of charge does not appear large, to us who are familiar with British manufacture; but, when we take into account the very small daily wages of these Cashmere weavers, the proportionate price is then considerable.

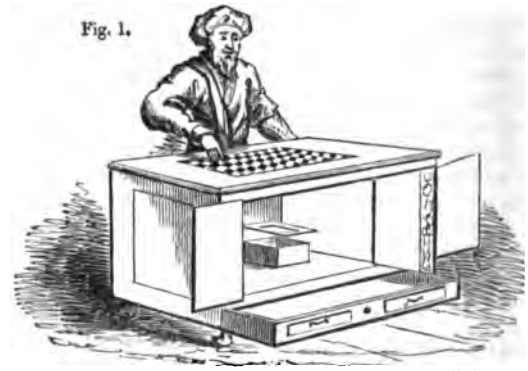
When Cashmere was tributary to Afghanistan, a considerable portion of the public revenue was exacted in shawls, instead of money. Many of the shawls are exported in an unwashed state, and in the western parts of Asia they are worn also in that state; but in India there is no market for unwashed shawls, and therefore they are washed and packed at Umritsir, a town near Lahore, where the process of washing is more carefully attended to than at Cashmere.

With regard to the extent of the shawl manufacture in Cashmere, nothing more than an approximate estimate can be made. Two hundred years ago, it was supposed that there were forty thousand looms in Cashmere. Mr. Strachey, however, in 1809, stated the number at sixteen thousand; and adds, "It would perhaps be difficult to determine with accuracy the quantity of shawls manufactured annually; supposing, however, that five of all kinds are on an average made at each shop or loom in the course of a year, the number would be eighty thousand, which is probably not far from the truth."

ON CHESS. No. XIII.

THE AUTOMATON CHESS-PLAYER. I.

Fig. 1.



A perspective view of the Automaton, seen in front, with all the doors thrown open.

PROBABLY no contrivance of the fertile genius of man ever excited so much wonder and delight for upwards of half a century as the Automaton Chess-player. The announcement and subsequent production of a machine which appeared so to vary its operations and modes of action as to suit the ever-varying circumstances of a game of chess were sufficient to account for this excitement throughout Europe.

The results of automatic machinery in general cease to interest the mind strongly so soon as the effects produced by it are clearly traced to well-established physical causes. The wind which turns the sails of a windmill; the flowing stream which gives motion to a water-wheel; and the elastic steam which elevates and depresses alternately a piston, are simple results of self-evident causes. These prime movers may impart motion to more or less complicated machinery, so as to produce the variegated carpet which adorns our rooms, or the sheet of paper upon which we write, but still the mind is satisfied that these results are produced by machinery in motion, which motion is imparted and sustained by some well-known force. So also in machines which imitate many of the motions and attributes of animals the mind is soon satisfied that the cause is mechanical, and resides within the automaton itself, since by a slight observation it is seen that the automaton is adequate to the performance only of a very limited routine of actions which are always repeated, like the tunes on a barrel-organ, in the same order.

Automata may be divided into three classes,—viz., the *simple*, the *compound*, and the *spurious*. The first class comprises those insulated automata, the movements of which result from mechanism alone, by the aid of which they perform certain actions, and continue them so long as the moving force is kept in an active state. As examples we may cite the trumpeter of Maelzel, the flute-player of Vaucanson, the self-acting piano-forte, * &c.

The second class includes those automata which, like the former are moved by machinery, but possessing at the same time a secret communication with human agency, are enabled to change the regular order and succession of their movements according to existing circumstances, and hence in some manner to assume the character of living beings.

The third class contains those automata which, under the semblance only of mechanism, are wholly directed and controlled by a concealed human agent.

Now it must be at once perfectly clear to every intelligent reader that the Automaton Chess-player cannot belong to the first class, because, great and surprising as the powers of mechanism assuredly are, the movements which result from it are necessarily limited and uniform. Those who know anything of the difficulties and intricacies of chess will readily admit that intellect, and that

* This class of Automata is described in *Saturday Magazine* Vol. XVIII., pp. 62 and 69.

of no mean order, is alone equal to the task of managing this game; that machinery can never usurp and exercise the faculties of mind, and therefore that the Chess Automaton, which in its day encountered, and often conquered, some of the first-rate professors of chess, cannot be admitted into the class of *simple* automata. Its claims to a place either in the second or in the third division the reader will easily decide upon after a perusal of the following details.

The Chess Automaton was the invention of Wolfgang de Kempelen, a native of Hungary, Aulic councillor to the royal chamber of the domains of the Emperor of Germany, and celebrated for his skill in mechanics. In the year 1769 de Kempelen, being at Vienna on business relative to his office, was ordered to court to be present as a scientific witness of some magnetic games or performances which one Pelletier, a Frenchman, was to exhibit before the Empress Maria Theresa. During the exhibition, Her Majesty having condescended to enter into familiar conversation with de Kempelen, he was induced to hint that he thought himself capable of making a machine, the effects of which would be more surprising, and the deception more complete than anything Her Majesty had seen during this magnetic exhibition. The empress took him at his word, and expressed so earnest a desire to see his project carried into execution that she obtained a promise of him to set about it immediately. He kept his word, and in six months again appeared at the Court of Vienna in company with the Automaton Chess-player.

It may readily be supposed that this automaton excited the admiration and surprise of every one who either saw it play or played with it. An account of the invention soon spread through a great part of Europe; the newspapers and journals were eager to announce its marvellous powers; the smallest scrap of information respecting it was read with avidity; and the result of all this excitement was that these accounts become daily more exaggerated and contradictory. Even an intimate friend of the inventor, who had repeated opportunities of witnessing the performances of the automaton, expresses himself in the following high-flown terms.

The boldest idea that ever entered the brain of a mechanic was doubtless, that of constructing a machine to imitate man, the master-piece of the Creation, in something more than figure and motion. M. de Kempelen not only conceived this idea, but also carried it into execution; his Chess-player being beyond contradiction the most astonishing automaton that ever existed. Never before did any mere mechanical figure unite the *vis motrix* with the *vis directrix*, or to speak more clearly, the power of moving itself in different directions as circumstances unforeseen and depending on the will of any person present might require. Was a wooden figure ever before seen playing at the most difficult and complicated of all games, frequently beating the most consummate adept, and setting him right if ever he deviated from the rules of the game?

The same writer published a series of letters to a friend descriptive of all the "externals" of the Chess Automaton*. These letters are extremely interesting, not only on account of the admiring simplicity with which he speaks of the invention of his friend; but for the information they give as to the mode of exhibition adopted by de Kempelen from the very first. Our author writes to a friend at a distance from Vienna, and begs him to set bounds to his curiosity, "for he cannot gratify it;" and although he admits the automaton "must be a deception," yet "he is forced to the humiliating avowal that it is as incomprehensible to himself as to the person he addresses." He is, however, kept in countenance by the fact that "others endowed with much superior knowledge and quicker penetration have not been more successful than himself in developing the mystery." And then growing warm with his subject he exclaims, "It is a deception!—granted: but such an one as does honour to human nature; a deception more beautiful, more surprising, more astonishing than any to be met with in the different accounts of mathematical recreations."

In our next article on this subject we will describe particularly the appearance and performances of the Chess Automaton. We will conclude our present notice with two extracts from the author already quoted.

The first idea that strikes you on a superficial examination of this chess-player is a suspicion that its movements are effected by the immediate impulse of some human being. I myself fell into this mistake. When I first saw the inventor shove his automaton, fixed to a kind of large cupboard, out of an alcove, I could not any more than the rest of the company avoid suspecting that this cupboard certainly contained a child, which from the size of it I supposed might be from ten to twelve years old. Many of the company were so fully persuaded of it that they made no scruple to declare it. I assented only in silence to their opinion, but was not less confused when I saw M. de Kempelen tuck up the dress of the automaton, take out the drawers, and open all the drawers of the cupboard, and in this situation roll it round the room on the castors which it goes upon, turning it in every direction so as to enable each person present to examine it on all sides. You may be sure that I was not a little eager to gratify my curiosity. I examined even the minutest corner of it, without being able to find anything throughout the whole capable of concealing an object the size of my hat. My vanity was grievously mortified to see my hypothesis, which at first sight appeared so plausible, instantaneously disproved.

I know not whether the whole company were affected in the same manner: but I thought I could perceive in many of their countenances marks of the greatest surprise. One old lady in particular who had not forgotten the tales told her in her youth, crossed herself, and sighing out a pious ejaculation went and hid herself in a window seat, as distant as she could from the *evil spirit*, which she firmly believed possessed the machine.

Our author being thus fairly put upon a wrong scent has recourse to the idea of a secret communication between the automaton and some neighbouring apartment. This leads him to describe the residence of M. de Kempelen thus—

M. de Kempelen resides here at Presburg, and occupies with his family the first floor of his house; his little workshop together with his study where the automaton is placed, are on the second floor. When the automaton is exhibited, the company assemble in the lower apartment, from whence they are conducted up stairs. In passing through the workshop which serves as an antechamber to the study, you see nothing but joiner's, smith's and clockmaker's tools, lying in heaps in that confusion so characteristic of the abode of a mechanical genius. The walls of the study are in part hid by large presses, some containing books, others antiques, and the remainder a small collection of natural history: the intermediate spaces are decorated with paintings or prints, the performances of the master of the house.

The writer satisfies himself that no communication can possibly exist between the automaton and an adjoining room; this was indeed proved by the machine being carried for exhibition to the Imperial Palace.

Fig 2.

An elevation of the Automaton, as seen from behind.

* The title of this book is remarkable, and displays the spirit of credulity with which it was written. It is as follows:—INANIMATE REASON; *or a circumstantial Account of that astonishing piece of Mechanism, M. de Kempelen's Chess-player.* By M. CHARLES GOTTLIEB DE WINDISCH. This gentleman is spoken of, elsewhere, as the respectable author of *The History and Geography of the Kingdom of Hungary*, and the intimate friend and countryman of M. de Kempelen.

AGRICULTURAL CHEMISTRY.

I. ON THE INTERCHANGE OF CROPS.

AT one of the meetings of the Chemical Section of the British Association for the advancement of Science, the preparation of a Report on Organic Chemistry was assigned to Dr. Justus Liebig, Professor of Chemistry in the University of Giessen. This Report has been edited by Dr. Lyon Playfair, and recently published under the title of "Organic Chemistry, in its applications to Agriculture and Physiology." From this work, which is one of the most profound and useful contributions to science, we propose to select a few subjects capable of being presented to the reader in a popular form.

IT has long been known to the agriculturist that the growth of annual plants is impeded, and the produce rendered less abundant, by cultivating them during successive years on the same soil, and that, notwithstanding the loss of time, a larger quantity of grain is obtained when a field is allowed to remain uncultivated for a year. During this interval of repose, the soil, in a great measure, regains its fertility.

Experience has also led to the observation that certain plants, such as peas, clover, and flax, flourish on the same soil only after a lapse of years; whilst others, such as hemp, tobacco, rye, and oats, may be cultivated in close succession. It has been also found that several of these plants improve the soil, whilst others, and these are the most numerous, impoverish or exhaust it. Fallow turnips, cabbage, beet, spelt, summer and winter barley, rye, and oats, are supposed greatly to impoverish the soil; whilst wheat, hops, madder, late turnips, hemp, poppies, teasel, flax, weld, and licorice, are supposed to exhaust it entirely.

From the earliest times manure has been employed to increase the fertility of soils; and experience has proved that manures restore certain constituents to the soil, which have been removed by the plants grown upon it; but it has been observed that crops are not always abundant in proportion to the quantity of manure employed, even, although it may have been of the most powerful kind: that the produce of many plants diminishes in spite of the apparent replacement of the substances removed from the soil by manure, when they are cultivated on the same field for several years in succession.

It has been remarked, on the other hand, that a field which has become unfitted for a certain kind of plants was not on that account unsuited for another; and, upon this observation, a system of agriculture has been gradually formed, the chief object of which, is to obtain the greatest possible produce with the least expense of manure.

It was deduced from the foregoing facts that plants require for their growth different constituents of soil, and it was very soon perceived that an alternation of the plants cultivated maintained the fertility of a soil, quite as well as leaving it at rest or fallow. It was evident, therefore, that all plants must give back to the soil in which they grow, different proportions of certain substances, which are capable of being used as food by a succeeding generation.

Many explanations have been offered respecting the cause of the favourable effects of the alternation of crops; but the theory of De Candolle is the one which has received the greatest share of attention.

This distinguished botanist supposes that the roots of plants imbibe soluble matter of every kind from the soil, and thus necessarily absorb a number of substances which are not adapted to the purposes of nutrition, and must subsequently be expelled by the roots, and returned to the soil as excrements. Now, as excrements cannot be assimilated by the plant which ejected them, the more of these matters which the soil contains, the more unfertile must it be for plants of the same species. These excrementitious matters may, however, still be capable of assimilation by another kind of plants, which would thus remove them from the soil, and render it again fertile for the first. And, if the plants last grown also expel substances from their roots, which can be appropriated as food by the former, they will improve the soil in two ways.

This view of the subject is countenanced by many well-known facts. Every gardener knows that a fruit-tree will not grow on the same spot, where another of the same species has stood; at least not till after a lapse of several years. Before new vine-stocks are planted in a vineyard from which the old have been rooted out, other plants are cultivated on the soil for several years. It has also been remarked, that several plants thrive best when growing beside one another; and, on the contrary, that others mutually prevent each other's growth. Whence it was concluded, that the beneficial influence in the former case depended on a natural interchange of nutriment between the plants, and the injurious one in the latter on a poisonous action of the excrements of each on the other respectively.

But the theory of M. De Candolle has been confirmed in a satisfactory manner by a series of admirable experiments by M. Macaire which we will briefly d tail.

The roots, of the *Chondrilla muralis* were carefully cleaned and immersed in filtered rain water: the plant continued to flourish, and put forth its blossoms, and at the end of eight days the water was of a yellowish colour, indicating to the smell and taste the presence of a bitter narcotic substance, similar to that of opium,—a result which was further confirmed by using chemical tests, and by a reddish-brown residuum which remained after evaporating the water. It was ascertained that neither the roots nor stems of the same plants, when completely detached and placed in water could produce this effect, which seems to be the result of an exudation from the roots, necessary to the health of the plant. By comparing the results of various experiments on the quantity of matter thrown off by the roots of the French bean, by night and by day, it was found to be much more considerable by night,—an effect which it is natural to refer to the interruption of the action of the leaves when deprived of light, and when the corresponding absorption by the roots is also suspended. This was confirmed by the result of some experiments made on the same plants by placing them during the day in a darkened room, when the excretion from the roots was found to be much increased; but, even when exposed to the light, there is always some exudation, though in small quantity, going on from the roots.

By this excretory process plants are enabled to get rid of any noxious matters which they may have absorbed from the soil. This was proved by experiments on several plants, among which was the common cabbage. The root of the cabbage was washed clean, and the fibres separated into two bunches, one of which was immersed in a weak solution of acetate of lead, and the other bunch in pure water, contained in a separate vessel. After a few days, during which the plants vegetated tolerably well, an appreciable quantity of acetate of lead was found in the vessel which contained at first only pure water. In order to prove that the poison was actually absorbed into the body of the plant the experiment was varied: the plant was first allowed to remain with its roots immersed in a solution of acetate of lead: it was then removed and carefully washed, in order to get rid of all traces of the solution from the surface of the roots, after which it was placed in a vessel containing pure water, which in two days' time became contaminated with acetate of lead. Similar results were obtained when lime-water and a solution of common salt were substituted for the acetate of lead.

M. Macaire also found that the water in which certain plants had been kept was injurious to other plants of the same species, while it produced decidedly beneficial effects on plants of a different kind.

When substances which cannot from their nature be employed in the nutrition of a plant exist in the matter absorbed by its roots they must be again returned to the soil as excrements, which, however, may be serviceable, or even indispensable, to the existence of several other plants. Substances, however, that are formed by the vegetable organs during the process of nutrition, which are produced in consequence of the formation of woody fibre, starch, albumen, gum, acids, &c., cannot again serve in any other plants to form the same constituents of vegetables.

The matter thrown off by the roots of plants as excrements, undergoes during autumn and winter a useful change from the action of air and water: its putrefaction, and at length by continued contact with the air, which tillage is the means of procuring, its decay, are effected; and at the commencement of spring it has become converted, either in whole or in part, into a substance which supplies the place of humus*, by being a constant source of carbonic acid.

The quickness with which this decay of the excrements of plants proceeds, depends on the composition of the soil, and on its greater or less porosity. It will take place very quickly in a calcareous soil; but it requires a longer time in heavy soils, consisting of loam or clay.

The same plants can be cultivated with advantage on one soil after the second year, but in others not until the fifth or ninth, merely on account of the change and destruction of the excrements, which have an injurious influence on the plants, being completed in the one, in the second year; in the others not until the fifth or ninth.

In some neighbourhoods clover will not thrive till the sixth year; in others not till the twelfth; flax in the second or third year. All this depends on the chemical nature of the soil; for it has been found by experience, that in those districts where the intervals at which the same plants can be cultivated with advantage are very long, the time cannot be shortened even by the use of the most powerful manures. The destruction of the peculiar excrements of one crop must have taken place before a new crop can be produced.

Flax, peas, clover, and even potatoes, are plants, the excrements of which in clayey soils require the longest time for their conversion into humus; but the use of alkalies and burnt lime, or even small quantities of wood ashes, (which have not been wetted so as to remove the alkali contained in them,) must enable a soil to permit the cultivation of the same plants in much less time.

A soil lying fallow owes its earlier fertility, in part, to the destruction or conversion into humus of the excrements contained in it, which is effected during the fallow season, at the same time that the land is exposed to a further disintegration. In the soils in the neighbourhood of the Rhine and Nile, which contain much potash, and where crops can be obtained in close succession from the same field, the allowing of the land is superseded by the inundation. The artificial irrigation of meadows effects the same purpose. It is because the water of rivers and streams contains oxygen in solution, that it effects the most complete and rapid putrefaction of the excrements contained in the soil which it penetrates, and in which it is continually renewed. If it was the water alone which produced this effect, marshy meadows should be the most fertile.

A fertile soil ought to afford to a plant all the inorganic bodies necessary to its existence in sufficient quantity and in such condition as allows their absorption. All plants require alkalies, and these are contained in some plants (as in the grasses) in the form of silicates; in others in the form of tartrates, citrates, acetates, or oxalates. Some species of plants require phosphate of lime, or phosphate of magnesia, and several do not thrive without carbonate of lime.

* Woody fibre, in a state of decay, is called *humus*, and is the principal constituent in mould. Humus acts in the same manner in a soil permeable to air as in the air itself; it is a continued source of carbonic acid, which it emits very slowly. An atmosphere of carbonic acid formed at the expense of the oxygen of the air surrounds every particle of decaying humus. The cultivation of land by tilling and loosening the soil, causes a free and unobstructed access of air. An atmosphere of carbonic acid is therefore contained in every fertile soil, and is the first and most important food for the young plants which grow in it.

THE PANDEAN PIPES, OR MOUTH-ORGAN.

> The rural ditties were not mute,
> Tempered to the oaten flute,
> Rough satyrs danced, and fauns with cloven heel
> From the glad sound would not be absent long,
> And old Damœtas loved to hear our song.——MILTON.

AMONG the musical instruments familiarly known to us at the present day, there is one which, though it has acquired a sort of a character for vulgarity, is one of the most ancient of all. We allude to the *Mouth-organ*, known to classical readers by the names *Syrinx*, and *Fistula Panis*, or Pan's Pipes.

The formation and the mode of playing musical instruments among the ancients have formed the subject of considerable research; great difficulty being experienced in knowing the proper interpretation or translation to be given to certain terms used by the classical writers. The first attempt at a wind instrument seems to have been the employment of the shell of some particular fish, or the horn of a quadruped. To this probably succeeded the use of the *Avena*, or single oaten stalk; the *Calamus*, or single reed; and the *Syrinx* or *Fistula*, a number of reeds of different sizes, ranged side by side, each one stopped at the lower end. It was the opinion of Dr. Burney, that such simple instruments as these, in which each pipe is employed to yield but one note, preceded the employment of those which were provided with *foramina*, or holes, and which, by stopping one or more of these holes with the fingers, could be made to yield several notes. When this latter method became known, a great advance in the mnsical art resulted; and the artificers gradually attained the skill to make such instruments of box-tree, laurel-wood, brass. silver, and even gold.

Flutes or pipes, called *Tibiæ*, were much used in the theatrical exhibitions of the ancients, some of them approaching nearly to the form of a shepherd's pipe, as represented in old pictures, and indeed all of them bearing more resemblance to a flageolet than to a modern flute. But with regard to the instrument now called a mouth-organ, it does not appear to have been similarly employed. It is a circumstance not a little remarkable, that the god Pan is almost invariably represented as playing on this instrument; a fact which, whatever may have been its source, is strongly indicative of the familiar use of such an instrument among the early Greeks. In some of the pictures wherein Pan is introduced, the syrinx on which he appears to be playing, is composed of tubes or pipes having a square sectional area; while in others the pipes are of cylindrical form. In the cut at the end of this article, the pipes are six in number, and of a square form. This representation is taken from an ancient basso-relievo of Greek sculpture, in the Giustiniani Palace at Rome, the sculpture pourtraying the nursing of Jupiter by Amalthea. Pan is holding the syrinx in his left hand, while in his right he grasps a horn, resembling the *shawm*, represented upon the Arch of Titus, among the instruments supposed to have been copied from those brought by this emperor from Jerusalem.

A French writer of the last century relates his having seen at Rome, on a monument in the Farnese Palace, a syrinx with eleven pipes; the first five being of equal lengths, and consequently producing notes of the same pitch; with six others of equal diameter, but of different lengths from the first five. "I confess," says he, "that I am unable to conceive the use of the five first reeds or pipes of the same length for no two of them could be made to sound at once. Is it not possible that these

five pipes were half tones, and differed from each other in length so little, as to seem all of a length? or perhaps they differed in diameter, and may have all produced different tones, though of equal length." But to this supposition it has been objected, that the ancient Greeks had no succession of regular semitones in their musical scale.

Without dwelling longer on the early history of the syrinx,—except to remark that this word is the Greek name for the instrument, that *Fistula Panis* is the Latin name, that *Pan's Pipes* is the English translation of this latter name, and that *mouth-organ* is a name in some degree expressive of the mode in which the instrument is played,—we will describe the acoustical principles on which this instrument acts.

When we blow into an open tube, that is, a tube of cylindrical bore with both ends open, we merely send a forcible current of air from one end of the tube to the other, and produce a *wind*, which is nothing more than a slightly audible agitation of the air. But when one end of the tube is stopped, and we blow into the open end in an oblique manner, with the lips compressed, so as to give a forcible impetus to the breath, a musical *note* results, which is more or less pleasing according to circumstances. Now the difference between a *sound*, such as that resulting from the mere emission of breath, and a musical *note*, consists in this, that in the latter case a current of air is set into regular vibration, performing a certain number of regular oscillatory movements in a certain space of time. It has been found by experiment, that a note having the same pitch as the middle A of the treble clef, is the result of 420 vibrations in a second,—a number indicating an astonishing degree of rapidity in the successive changes in the conditions of the air.

The vibrations here spoken of may be excited either by the agitation of a musical string, or of a column of air in a pipe; the pitch depending on the absolute frequency of vibration, and not upon the manner in which those vibrations are excited. In the case now before us, we blow in a tube, the lower end of which is stopped, and thus excite a rapid oscillatory motion of the particles of air within the tube, which motion is communicated to the external air, and thence to the ear.

But it is a very remarkable part of the phenomenon, and one on which the construction of the mouth-organ mainly depends, that the pitch of the note resulting from these vibrations varies with the length of the pipe; a shorter pipe yielding a more acute or elevated tone than a long one. The mode in which this difference arises is as follows. The vibration of the column of air in the tube, takes a certain time to travel to a certain distance,—viz., at the rate of 1125 feet per second; so that the time which it takes to travel from end to end of the tube will depend simply on the length of the tube, or on the proportion which that length bears to 1125 feet. Consequently a short tube permits the transference of this agitation from end to end, in a shorter time than a long tube; and, as a consequence of this, the repetition or succession of these impulses occurs with greater rapidity. The air will vibrate twice as fast in one tube as in another tube of twice the length; because the agitation has only half the distance to travel in each separate vibration.

There is a curious connexion between the relative lengths of two pipes, and the relative pitch of the notes which are yielded by them. Let us suppose that we have one which yields the A before mentioned, that is, the note resulting from 420 vibrations in a second. If the other be of such a length as to give 840 vibrations in a second (and this will result if, other things being the same, it be only half as long as the other); then the note yielded will be A, one octave higher than the A of the other pipe. If the second one be so much longer that it only gives 210 vibrations in a second, then it yields a note one octave lower than the A first spoken of, and two octaves lower than the other A. But if the lengths of the two pipes be in any less simple proportion, the notes produced will form intermediate steps in the musical scale; thus 256 vibrations in a second, being equal to $\frac{4}{5}$ of 420, will yield the note C, a major-sixth (in musical language) below the former. If we consider this C as a kind of standard note, we shall find that the following fractions, representing the comparative frequency of vibration, 1, $\frac{9}{8}$, $\frac{5}{4}$, $\frac{4}{3}$, $\frac{3}{2}$, $\frac{5}{3}$, $\frac{15}{8}$, 2; or the numbers 256, 288, 320, 341$\frac{1}{3}$, 384, 416$\frac{2}{3}$, 480, 512, will represent the vibrations necessary to produce the succession of notes of the natural scale, C, D, E, F, G, A, B, C. By producing a number of vibrations greater than any here indicated, we shall produce a higher note; and with a less number, a lower note.

On these principles the *mouth-organ* is constructed. It consists of a number of hollow canes or reeds, ranged side by side, and secured by cross bands of cane. The bottom of each pipe is stopped, either by one of the natural joints of the cane, or by wax or some similar substance; while the upper end is open. The lengths of the pipes decrease gradually from one end to the other, the longer being also generally the wider pipes. This increase of diameter is intended, not so much to affect the pitch of the note, as to give a greater roundness and richness to the tone of the lower notes. The length of the pipe is, as before stated, the circumstance which principally regulates the pitch; and this length is arranged on the principles just explained. It is very probable that the maker of the instrument is ignorant of the principles on which he is proceeding; but his proceedings are not the less governed by principles. He endeavours so to regulate the lengths of the pipes as to produce the succession of notes forming the regular Diatonic scale; and in so doing, he finally settles on such lengths as will will yield the numbers of vibrations indicated above, or at least, the *proportions* of those numbers; for the actual number will depend on the octave which forms the main part of the instrument.

The mouth-organ is, from its nature, not very likely to get out of order, since the lengths of the pipes, on which the pitch of the notes depends, are less likely to yield from changes of temperature than the other dimensions. It must be obvious to any one at all acquainted with the action of organ pipes in general, that the reeds of a mouth-organ bear a considerable resemblance to them, inasmuch as they produce sounds by the longitudinal vibration of a column of air. Hence the popular name of the instrument.

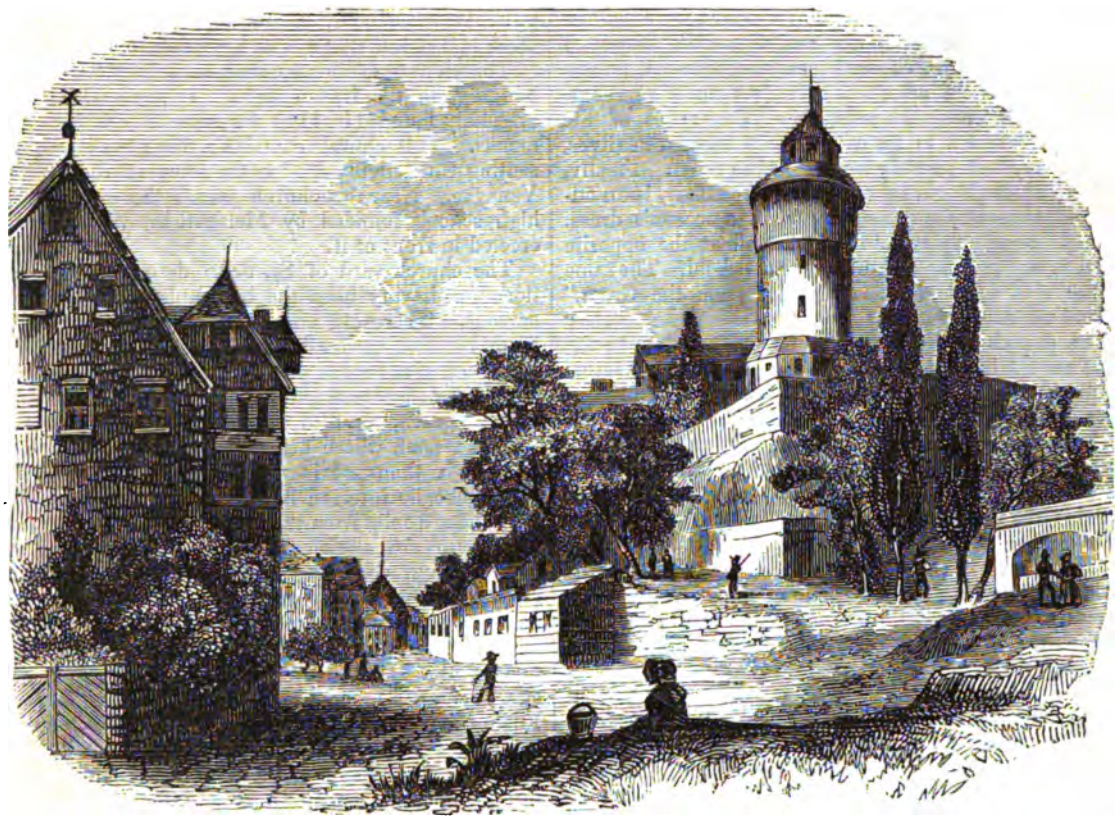
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 579. JULY 10TH, 1841. {PRICE ONE PENNY.

NUREMBERG



THE CASTLE OF NUREMBERG.

THE town of Nuremberg, or Nürnberg, in Bavaria, though fallen from its ancient wealth and consequence, and become, in a commercial sense, a dull and unattractive spot, will nevertheless be pleasing to the traveller of taste, and will fully repay the attention he may be induced to bestow on its examination. In former days it was one of the most flourishing towns included in the Hanseatic league, and was reckoned among the most wealthy of the free Imperial cities. It was the residence of emperors, the seat of diets, and, before the trade with the East Indies took a new direction, the focus of commerce between Asia and Europe. Nor were these its only advantages: the manufactures of Nuremberg were long and justly celebrated, and brought a large accession of wealth to the town. Various mathematical and musical instruments were invented, and the first pocket-watches made in that town. The manufacture of these articles, as well as of hardware of all kinds, and toys of brass and wood, caused Nuremberg to be highly celebrated. The trade in such wares is still very considerable, and, owing to the cheapness of the toys in particular, half the children in Europe are supplied with playthings, called Dutch toys, from that source. These toys are chiefly made by the peasants of the Thuringian forest, who employ themselves and their families on such labours during the winter, and by their simple and frugal habits, are able to produce them at a surprisingly low price. For the sale of Nuremberg wares an annual fair is held, at which much business is transacted. Yet, compared with its ancient traffic—so extensive as to give rise to the proverb,

> Nuremberg's hand
> Goes through every land,—

the present trade of Nuremberg may be called trifling, as the condition of the city is also greatly altered.

The outward aspect of Nuremberg has not partaken much of the decay which has fallen on its commercial interests, and it is in the appearance of the city, as it stands surrounded by feudal walls and turrets, and inclosed within arched gates, with massive cylindrical watch-towers, that the traveller may recognise its ancient grandeur and strength; while, as he examines the quaint buildings of the city, and wanders through its irregular streets, he may fancy himself carried back to a distant century. Most of its churches are in a state of beautiful preservation, and have escaped in a manner that seems almost miraculous, the storm of regular warfare, and the outbreaks of mistaken zeal. The principles of the Reformation were early embraced by the inhabitants of Nuremberg; but the churches were not, as in too many other instances, despoiled of their architectural embellishments. The private dwellings, many of them of a palace-like extent, and built of stone, are likewise in excellent preservation, and are in some instances still inhabited by the families whose forefathers originally constructed them.

Nuremberg is celebrated as the birth-place of Albert Dürer, called the Raphael of Germany; of the famous

sculptor Peter Vischer, the poet Hans Sachs, and the gallant knight Beham, the friend of Columbus.

St. Sebald's church, a very beautiful Gothic edifice, contains the master-piece of art, of which Germany is justly proud, the *Shrine of St. Sebaldus*, executed by Peter Vischer, after a design by Albert Dürer. The sculptor, assisted by his five sons, spent thirteen years of labour on this work, and completed it in 1519. It is a miniature Gothic chapel in bronze, consisting of a rich fretwork canopy, supported on pillars. The figures of the Apostles occupy twelve niches around the shrine, and, for their grace, expression, and varied action, are justly extolled by every person conversant with fine sculpture. Above these are twelve smaller figures of Fathers of the Church, and, scattered around, among foliage and flowers, are about seventy fanciful representations of mermen, animals, &c. The relics of the saint are enclosed in an oaken chest, encased in silver, which is most elaborately worked in bas relief. Finally, at that end of the shrine which faces the altar, is an admirable statue of the artist himself, in a mason's dress, with apron on, and chisel in hand; and at the opposite end a figure, equally excellent, of St. Sebald. The same church also contains "The Descent from the Cross," painted by Albert Dürer.

The church of St. Lawrence is considered to be the finest church in Nuremberg. It is of a noble Gothic architecture, and is very rich in decorations. The windows are exquisitely painted, and one of them, the Volkamer window, for the depth and brightness of its colours, and the excellence of its design, is said to be scarcely equalled throughout Europe. This church contains the celebrated *Sacrament-hauschen*, or tabernacle for the reception of the sacramental wafer, delicately executed in the form of a spire, of Gothic openwork, by Adam Kraft; the whole of the exquisite stone structure, which tapers to the height of sixty-four feet, is supported by three figures, representing himself and his apprentices.

The castle of Nuremberg occupies the most northern and elevated position within the town. It is of great antiquity, so that no precise date can be assigned for its erection. It is built on a rock of red stone, unlike any other found in the country, and tradition attempts to account for this in the same way that it explains many other curious facts, by attributing it to the work of a magician. The rock and castle, say the superstitious of Nuremberg, were both transported from the neighbourhood of the Rhine in one night. This edifice towers above all the other buildings, and commands the best view of Nuremberg, and of the country around. It appears to have received few modern additions, and is therefore interesting as a specimen of the ancient style. The emperors of Germany made the castle of Nuremberg at various periods their residence: they took pleasure in the prosperity of the city, knowing its importance, and they found its situation, nearly in the centre of their dominions, well adapted for their convenience. The imperial regalia were deposited in the chapel of the Holy Ghost for nearly three centuries, but are now removed to Vienna. The castle has two towers, supposed to be of extreme antiquity, the Pentagonal tower, and the Heathen tower, so called from some carved figures upon it, said to be idols. It also contains two very remarkable chapels, one supported by low and thick arches, and assigned to the tenth century; the other, or upper chapel, resting on slight marble pillars, with Corinthian capitals, and also very ancient. The Corinthian pillars, says tradition, were brought from Rome by the evil one, who had laid a wager with the almoner that he would carry them in less time than mass could be performed. Three pillars were safely deposited, and the spirit had just arrived at the chapel with the fourth, when he found the clerk putting out the candles, and mass concluded. This put him in such a fury, that he dashed the pillar to the ground, and broke it in two pieces. Lest any one should presume to doubt the truth of the story, the fractures are shown where the pillar was cemented together, and an image of the devil's head is fixed in the wall facing the door of the chapel.

Briefly to notice some of the other public buildings of Nuremberg, the *Rath-haus*, or town-hall, is one of the finest in Germany. It is built in the Italian style, and contains, among other curiosities, a number of paintings, some of which are by Albert Dürer, and have suffered much by time, having in some cases been injudiciously restored. In the upper story of the Rath-haus is a singular representation, in stucco, of a tournament held there in 1434, the figures as large as life.

The church of St. Ægidius is a handsome modern building, in the Italian style. It succeeded a chapel originally founded in 1140 for some Scotch Benedictine monks. This church contains a fine altar-piece, representing Christ lying dead in the arms of the Virgin, by Vandyke. Near this church stands the gymnasium, or high school, founded by Melancthon, whose statue is erected in front of it.

The church-yard of St. John deserves to be mentioned, as having been the burial-place of many noted persons. There are about three thousand grave-stones in this church-yard, all regularly numbered, and mostly decorated with bronze plates, bearing coats of arms, and devices of deceased patricians. No. 649 is Albert Dürer's grave, No. 503 Hans Sachs', a celebrated cobbler and poet, whose poems, mostly of a satirical sort, exceed six thousand in number. Sandrach and Adam Kraft also lie interred here. This burial-place is situated about a mile from the town; and between it and the town gate are stationed, at regular distances, seven stone pillars, each bearing a representation, in bas-relief, of a scene in the passion of our Saviour. These pillars were set up, according to tradition, by a citizen of Nuremberg, named Martin Ketzel, as a representation of the Dolorous Way, in Jerusalem, along which our Saviour is supposed to have passed, in going from Pilate's house to Calvary.

There are many well-conducted public institutions in Nuremberg, such as a polytechnic institution, a gymnasium, numerous schools, a society for the encouragement of manufactures, &c. The public paper, called the *Nuremberg Correspondent*, is one of the most widely-circulated in Germany. At one period, the proprietor, editor, and printer were all females.

We will conclude our notice of this city by mentioning the date of the most important inventions ascribed to its inhabitants. The first watches (called Nuremberg eggs) were made by Peter Hele in 1500; the gun-lock by a person not known, about 1517; the air-gun by Lobzinger, in 1560; the clarionet by Christopher Denner, in 1690; wire-drawing machine by Rudolph, in 1360; brass by Erasmus Ebner, in 1550.

OLD ENGLISH NAVIGATORS.

For Britons, chief,
It was reserved, with star-directed prow,
To dare the middle deep, and drive assured
To distant nations through the pathless main.
Chief, for their fearless hearts the glory waits,
Long months from land, while the black stormy night
Around them rages, on the groaning mast
With unshook knee to know their giddy way;
To sing, unquelled, amid the lashing wave;
To laugh at danger. Theirs the triumph be
By deep Invention's keen pervading eye,
The heart of Courage, and the hand of Toil,
Each conquered ocean staining with their blood,
Instead of treasure, robbed by ruffian war,
Round social earth to circle fair exchange,
And bind the nations in a golden chain.—THOMSON

As the naval glory of England, whether in the sad necessity of war, or in the laudable endeavour to promote

the operations of commerce and geographical science, must be a subject of interest generally to the inhabitants of the British islands; and as maritime discoveries, like other achievements of the human race, have, under the guidance or permission of Providence, progressed gradually, some notice of the lives of those eminent individuals who, in former days, contributed to the establishment of British credit on the highway of the seas, may be generally acceptable. We propose, therefore, to devote a series of articles to the lives of the old English navigators,—men who have so largely contributed to the civilization of the human race by rendering easy and familiar the passage of the ocean, which, up to the beginning of the fifteenth century, was, very generally regarded with those feelings which guided the pen of an old writer in the following passage:—

The ocean, (he remarks,) encircles the ultimate bounds of the inhabited earth, and all beyond it is unknown. No one has been able to verify anything concerning it, on account of its difficult and perilous navigation, its great obscurity, its profound depth, and frequent tempests; through fear of its mighty fishes, and its haughty winds; yet there are many islands in it, some of which are peopled, and others uninhabited. There is no mariner who dares to enter into its deep waters; or if any have done so, they have merely kept along its coasts, fearful of departing from them. The waves of this ocean, although they roll as high as mountains, yet maintain themselves without breaking; for if they broke, it would be impossible for a ship to plough them.

CABOT.

The history of this great navigator has been so much clouded in obscurity or misrepresented, that it would appear at first sight doubtful, whether we should put Cabot at the head of the naval worthies of *our* country; but the prominent parts of the following narrative will, we trust, satisfy the reader that we are justified in the course which we have taken.

Sebastian Cabot, the subject of this narrative, was the son of John Cabot, or Gabotto, as his name is sometimes found written. The elder Cabot was undoubtedly a native of Venice, who frequented England on commercial affairs; but little more is known of him than that he was a wealthy, intelligent merchant, and fond of maritime discovery. When his business caused him to sojourn in this country, his residence was at Bristol, where Sebastian was born in the year 1477. The young Cabot was early instructed in geography, navigation, and mathematics. When only nineteen years of age, he was included with his two brothers in a patent, dated 5th of March, 1496, and granted by Henry the Seventh to John Cabot, his father, for the discovery and conquest of unknown lands. The object of this expedition seems to have been, to find out new countries in a north-westerly direction, and above all, a shorter and more convenient passage to the East Indies.

It is remarkable, as showing the zeal and enterprise of these navigators, that this expedition, consisting of five ships, was equipped at the sole expense of the adventurers, which was probably the reason why these mariners did not set sail till the spring of the following year. The ship which the Cabots sailed in, was equipped at Bristol, and named "the Matthew." On the morning of the 24th of June, they first saw the coast of North America, probably the part now called Labrador, about 56° N. It does not appear that there is any farther account of this discovery; but it seems probable that the expedition returned to England immediately, in order to re-visit the newly discovered countries, with more definite objects of trade and empire.

In the privy purse expenses of Henry the Seventh is found a very curious item,—"10th August, 1497: To hym that found the new Isle £10." This isle is supposed to be Newfoundland, which is to the south-east of Labrador. This seems probable; for in another patent, granted to John "Kabotto," he is permitted to take six ships in any haven of the realm, of the burden of 200 tons and under, "to convey and lede to the Londe and Isles of late founde by the seid John, in owre name, and by our commaundemente," &c. At this time Sebastian seems to have been esteemed as the most scientific navigator of the family. When, about this period, the great discovery of Columbus began to be talked of in England, as a thing almost more divine than human, the effect of it upon young Cabot's imagination was to excite "a mighty longing," to use his own words, "and burning desire in his heart that he too should perform some illustrious action." For some reason or other the elder Cabot did not head the expedition just referred to; but it devolved on Sebastian, whose progress in naval science, aided by his father's example and instruction, had been very great. Our mariner, at this time, could not have been more than twenty-two years of age. About this time, *i.e.*, in 1499, John Cabot died; but there is no record of his death, nor is anything whatever known of Sebastian Cabot for the next twelve years.

In making the voyage above referred to, Cabot sailed from England in the summer of 1498, and directing his course by Iceland soon reached Newfoundland, which he called *Terra de Baccalhaos*, or land of cod-fish, from the great quantity of that sort of fish found there.

Of this remarkable voyage a short account is preserved by Peter Martyr, the historian of the New World, a writer of high authority, and an intimate friend of the navigator, who, at the time he wrote, was in the habit of paying him frequent visits at his house.

Martyr tells us that the northern seas, between Europe and America, were navigated and explored by Sebastian Cabot, who fitted out two ships in England at his own cost, and with three hundred men directed his course so far towards the North Pole, that, even in the month of July, he found great heaps of ice swimming in the sea, and almost continual daylight. In our summer the sun does not set at the North Pole for several months together; which curious fact is illustrated and explained in a Supplement on Astronomy, in a former part of this work [No. 411].

Martyr goes on to say that Cabot saw the land cleared of ice, which had been melted by the heat of the sun; and, seeing such masses of ice drifting down before him, he was compelled to turn his sails, and follow the west, then coasting still by the shore, he was brought far into the south by reason of the land bending so much southward. As he passed along the coasts, called by him *Baccalhaos*, he affirmed that he found the same current of the waters towards the west, which the Spaniards met with in their southern navigations, with the single difference that they flowed more gently. To account for the phenomenon of the waters of the ocean moving westward, which was of course first observed in the Atlantic, Martyr conceived that there must exist between the Old and New Hemispheres of the globe, certain great gaps or open places, through which the waters continually pass from east to west. The cause of this natural phenomenon, however, Cabot was expected to elicit;—the question at issue being simply this:—Why the seas in that part ran with so swift a current from the east to the west?

Our more advanced knowledge of physical geography and astronomy enables us to explain the phenomenon just referred to. The principal currents are produced by the movement of the waters, perpetually setting from the polar regions towards the equator, and by the progression of the tropical seas towards the west; both of which are occasioned by the earth's rotation on its axis. By the laws of mechanics, any fluid body in rotation has a tendency to accumulate in a heap at the part in most rapid motion; and accordingly, we find the waters of the polar circles naturally flowing from their own stiller region, to that of the more rapidly revolving equatorial zone Strong currents are thus formed, which, in some

instances bear with them vast masses of ice. These are carried to a greater or less distance, according to local circumstances. Now the water which arrives among the equatorial regions from the north, has not a rotatory motion of equal velocity with that of this portion of the globe; and consequently, it has an *apparent* motion from east to west.

Martyr informs us that at Newfoundland, the cod-fish, which the navigators took for tunnies, were so numerous, that they actually impeded the sailing of the ships! The inhabitants of those regions were found covered with the skins of beasts; but yet, not without the use of reason. He also relates that there are plenty of bears in those parts which feed upon fish. It is the habit of these animals to throw themselves into the midst of the shoals of fish, and seizing their prey, to bury their claws in their scales, drag them to land, and there devour them. On this account, he says, these bears seldom disturb men.

After sailing down southward with a view to a passage to the Indies, and discovering the coast of Florida, Cabot returned home, chiefly through want of provisions. Soon after the death of Henry the Seventh, he was sent for by Ferdinand, king of Spain, in which country he arrived in September, 1512, and immediately received the title of Captain, with a liberal salary. It appears from Spanish authorities, that Cabot had felt disgusted with the want of consideration shown him in England; but this seems to have been mainly owing to the civil disturbances in England, and the preparation for war with Scotland.

In the year 1515, Cabot was appointed to revise the maps and charts in use among Spanish navigators: he was also preferred to the station of member of the council of the Indies. He was also selected to conduct an important expedition for making new discoveries towards the west; but this plan was interrupted by the king's death. The new king of Spain, Charles the Fifth, was occupied elsewhere, and did not reach Spain for some time, during which the court was a scene of abominable intrigue. Fonseca, the enemy of Columbus, was in authority, and the insults offered by him and his creatures to Cabot, caused the return of the latter to England. In 1517 he was employed by Henry the Eighth, in connexion with Sir Thomas Perte, to make another attempt at a north-west passage. In this voyage he seems to have reached lat 67½° N., and to have entered Hudson's Bay, and given English names to many places therein. From this expedition he was obliged to return sooner than he intended, through the malice or timidity of Sir Thomas Perte, and the mutinous conduct of his crew.

After this voyage Cabot again visited Spain, where he was named, by Charles the Fifth, Pilot Major of the kingdom, and entrusted with the duty of examining all projects of voyages of discovery. The Molucca islands, in the Eastern Archipelago, at this time very much engaged the attention of mankind. The pope had presumed to give away the newly discovered countries of the world between Spain and Portugal; and the latter power having earnestly represented that the limits, assigned to her by the pope in his division of the New World, would include the Moluccas, it was resolved that a solemn conference should take place, in which all parties should state their claims, and experienced men should attend for the purpose of reference. At the head of this list was Cabot, and Ferdinand Columbus, son of the great navigator. The conference was held at Badajoz, in April, 1524, and by the end of May, sentence was pronounced that the Moluccas were within the Spanish division of the world. The Portuguese retired in disgust, and threatened an expedition to destroy any Spanish or other vessels trading within the disputed territory. Immediately after the decision, a company was formed at Seville to prosecute the trade to the Moluccas, and Cabot was appointed to the command of the first expedition sent out by the company. Unfortunately, the officers under Cabot were personally hostile to him. The expedition set sail in April, 1526, and proceeded to cross the Atlantic. On the Brazilian coast, a daring mutiny, excited by his officers, compelled him to resort to the extremity of putting on shore the three ringleaders, who were actually the persons named to succeed him in command, in case of his death. Cabot explored the river La Plata and some of its tributaries, erected forts, and endeavoured to colonize the country. He sent to Spain, and solicited the permission of the Emperor Charles to effect his object; as also a supply of ammunition, provisions, &c., which request was favourably regarded.

Another expedition arrived in the Plata in the subsequent year, commanded by Diego Garcia. After some disputes with Cabot, Garcia quitted the country, but left behind him some of his followers, who were guilty of acts which incensed the natives. In consequence, the whole nation burst with fury on the feeble colony, and Cabot was compelled to put to sea. He returned to Spain in 1531, where he resumed his old office, and made several other voyages. In 1548 he resolved to return to his native country.

The throne of England was then filled by Edward VI., who, being very solicitous about maritime affairs, conversed with Cabot, and received from him some explanation about the variation of the compass, first noticed, or at least first particularly attended to, by our navigator. Edward granted him a pension of 250 marks a year (166*l.* 13*s.* 4*d.*),—a munificent reward in those days, and deservedly bestowed. He also made him Pilot Major of the kingdom. Cabot remained high in the young king's favour, and was consulted in all affairs relating to trade and navigation. The advice and influence of Cabot in directing an expedition to the north, opened to England the valuable trade with Russia: he was made governor of the company of merchant-adventurers, by whom the expedition was fitted out; and the instructions delivered by him to the commander, Sir Hugh Willoughby, evince good sense, knowledge, and humanity.

The journal of Stephen Burroughs, who was despatched as commander of a vessel in the Russian trade, in the year 1556, shows the character of Cabot in a very favourable light. Speaking of a visit to the vessel at Gravesend, before her departure, he says,—"the good olde gentleman, Master Cabota, gave to the poore most liberall almes, wishing them to pray for the good fortune and prosperous successe of the Serchthrift, our pinnesse."

In the reign of Mary, the maps and documents of Cabot were consigned to the custody of one William Worthington, who was associated with him in his pension in the year 1557. It is supposed that all Cabot's nautical papers were by these means either destroyed, or put into the possession of Philip of Spain, the husband of Mary: certain it is, however, that they are no longer to be found.

The time and place of Cabot's death are not known; although his friend Eden gives some account of it. Speaking of a mode of finding the longitude, he tells us, "Cabot, on his death-bed, tolde me, that he had the knowledge thereof, by divine revelation, yet so that he might not teache any man." We are told, however, by Eden, that he thought that "the good old man in that extreme age somewhat doted, and had not yet, even in the article of death, utterly shaken off all worldlye vaine glorye."

FAME, fame; thou canst not be the stay
Unto the drooping reed,
The cool fresh fountain, in the day
Of the soul's feverish need;
Where must the lone one turn or flee?
Not unto thee, oh! not unto thee.—MRS. HEMANS.

CASHMERE SHAWLS.

II.

Attempts to introduce the Cashmere Goat and the Shawl Manufacture into England.

The Cashmere goat is not confined particularly to the valley of Cashmere; but is found in various parts of Central Asia, between the Himalaya mountains and the Black Sea. The principal points in the most approved breeds of the Cashmere goat are large ears, slender and cleanly-formed limbs, horns slightly twisted, and, above all, a long, straight, silky, white fleece. The quantity of the down procured by each goat does not exceed a few ounces in weight; so that the cost of shawls manufactured from this substance must ever be high.

In a former article we gave an account of the mode in which shawls are manufactured in Cashmere from goat's down, as also a few particulars respecting the goat itself. We will now detail the circumstances under which attempts have been made to introduce this source of individual wealth into England.

In the year 1828, a gold medal was presented by the Society of Arts to C. T. Tower, Esq., of Weald Hall, Essex, for having reared a flock of Cashmere goats, and having had a shawl manufactured from their down, and on that occasion a paper, published by the Society, furnished some interesting facts on this subject. Unsuccessful attempts had been made in former years by two or three persons to obtain, through British interest in India, a few of the Cashmere goats, in order to ascertain whether the breed could be naturalized in this country, and the gold medal of the Society had, for some years, been offered with the same view, in order to keep the public attention fixed on the subject. It is to France, however, that we owe the first successful attempt to bring over the goats to Europe, and to rear them. Two agents, MM. Fernaux and Jaubert, were sent out by the French government, about twenty years ago, to Persia, for the purpose of making purchases of goats in the north-eastern provinces of Persia, and bringing them to Europe. A considerable number of these animals was procured, and although many of them died in their long and wearisome march to the Black Sea, and in their passage thence to France, yet a certain number survived, and were brought to Paris in the year 1823.

Mr. Tower, happening to be in Paris at the time of the arrival of the goats, succeeded in purchasing four of them, two males and two females, and in conveying them safely to his residence in Essex. In the park at Weald Hall the animals continued in health, and multiplied steadily, the number having increased to twenty-seven by the year 1828. The goats showed no impatience of cold, and were very healthy, requiring only the occasional shelter of a shed in very rough weather. In spring, summer, and autumn, they grazed like sheep, and were fed during winter with hay and refuse vegetables from the garden; but their favourite food was the *gorse*, (*Ulex Europæus*,) which they devoured eagerly, without being annoyed by its prickles.

The coat produced by these goats is a mixture of long coarse hair and of short fine down. The down begins to be loose early in April, and is collected easily and expeditiously by combing the animals two or three times with a comb such as is used for dressing horses' manes. A good deal of the long hair comes off at the same time, but this is afterwards carefully separated. The down produced by a male is about four ounces, and of a female two ounces. Two pounds of down, as it comes off the goat's back, is estimated as sufficient to make one shawl, fifty-four inches square, and it will therefore require ten goats, male and female, to furnish materials for one shawl. Mr. Tower, in 1828, had three shawls made of the down produced by his goats, the yarn being spun by Messrs. Pease, of Darlington, and the shawls being woven by Messrs. Miller and Sons, of Paisley. One of these shawls was examined by the Committee of Manufacture, of the Society of Arts, and was found to be superior to others made of the French shawl-goat down, taken from the progeny of the goats brought over from Persia. This shawl, together with a pair of the goats, were subsequently presented by Mr. Tower to his late Majesty, King William the Fourth, as a memorial of the success which had attended this attempt. In the year 1833 Mr. Tower, in a letter to the Society of Arts, speaks of the progress of his flock in the following terms:—

As to my flock of goats, I have to report most favourably of its increase in point of numbers, and good condition. I have now upwards of fifty, and should in fact have had considerably above sixty, had I not lost ten or a dozen early last summer, from the injudicious supply given to them, in my absence from home, by the party attending them, of large quantities, which proved too succulent, and caused a loss to the above extent, by diarrhœa. The very small produce of the pure Thibet wool rendered it almost hopeless (as the quantity has not been found to be increased in this country) that they could be made to pay as an article of profit. When it is considered, however, that the first crop of the Angora quintuples the quantity, and promises rather to improve the adaptation of it to the manufacture of shawls,

we have only to import the Angora females, and the object is attained, whether for cultivation in this country, or export to Australia.

From the foregoing details we may gather, that although the Cashmere goat appears able to thrive in England, yet the small quantity of down yielded by each goat will render the manufacture unprofitable as a commercial speculation. We turn, therefore, to the subject alluded to in the last sentence of Mr. Tower's letter.

Mr. Riley, a gentleman many years resident in New South Wales, directed his attention to the best means of establishing a growth of fine wool in that country; and in pursuance of this object he transported to that territory, in the year 1825 and 1828, two flocks of the finest Saxon sheep procurable in Germany. The result proved favourable, for the wools of New South Wales, derived from those flocks, became eagerly purchased by manufacturers who were able to appreciate their excellence. Encouraged by this success, Mr. Riley next contemplated the introduction into the colony of the Cashmere goat, anticipating a result both favourable to himself and ultimately advantageous to the country generally. The son of this gentleman thereupon directed his attention towards the purchase of some of the Cashmere goats which were known to be then existing in France, the result of the mission of MM. Ternaux and Jaubert.

Mr. Riley, on inspecting the flock of Cashmere goats under the care of M. Ternaux, found that the quantity of down on each goat was so extremely small—not averaging above three ounces—that he deemed the animal wholly unfit for the object in view. The project of sending over some of these goats to Australia was therefore abandoned. Mr. Riley, however, was recommended to visit the flock of M. Polonceau, at Versailles, a gentleman who has succeeded in introducing an important improvement in relation to this subject. M. Polonceau was among the first to purchase a chosen selection of the Cashmere goats brought over by Ternaux; and having accidentally seen an Angora goat whose hair had an extraordinary silky appearance, resembling long, coarse, but very soft down, the idea struck him that from these two varieties of goat there might result a third variety possessing in many respects the joint qualities of the other two. The Angora goats were a peculiar breed introduced into France a few years after the introduction of the Cashmere goat. M. Polonceau made the necessary arrangements for testing the correctness of the idea which he had formed; and he had soon the pleasure of seeing springing up around him a little progeny of Cashmere-Angora goats, whose coats contained a considerable quantity of long, fine, soft, and glossy down, in every respect fitted for the purposes of shawl-weaving. In 1826, the Société Royale et Centrale d'Agriculture de Paris, acquainted with the intesting result of M. Polonceau's flock, being at that time in the third generation; and considering that the down of this new race was more valuable than those of the East, and that it was the most beautiful filaceous material known, as it combines the softness of Cashmere with the lustre of silk, awarded him their large gold medal.

M. Polonceau sold four of his goats to the King of Wirtemburg, for the sum of 3400 francs; but as he was not willing at that time to dispose of any more of his flock, Mr. Riley returned to England without effecting any of his projected purchases. At a subsequent period, however, this gentleman succeeded in obtaining from M. Polonceau ten female and three male Cashmere-Angora goats, which were safely conveyed to England for shipment to Australia. We believe those animals were forwarded to their Eastern destination; and that it was intended, not only to rear this valuable variety of the goat, but also to produce another variety, intermediate between, or combining the joint properties of the Cashmere-Angora goat, and the common goat of Australia.

Mr. Riley's communication to the Society of Arts, at the time he received a gold medal for his importation of the Cashmere-Angora goats into this country was made we believe about the time when the goats were about to be shipped off to Australia; and as we are not acquainted with the result of this interesting experiment, we will state briefly a few particulars respecting the down, resulting from M. Polonceau's experience.

M. Polonceau has goats which have yielded as many as thirty ounces of down in one season, and he states that the whole of his herd produce on an average from twelve to twenty ounces each, thus showing the great advantages which this breed has over the pure Cashmere, which never yield more than four ounces, and frequently not more than two ounces of down per goat. M. Polonceau states that the Cashmere-Angoras are more robust and more easily nourished than the common goat, and that they are less capricious and more easily conducted in a flock. They prefer the leaves of trees, as do all other goats, but they thrive either on hay or straw, or green fodder, or in meadows. They also feed with equal facility on heaths, and on the most abrupt declivities, where sheep would perish. For the first year or two of M. Polonceau's experiment he thought it prudent to give them aromatic herbs from time to time, but he afterwards deemed a continuance in that course unnecessary. During the course of six or eight years he could never discover any particular disease to which the goats were liable, for they continued in robust health.

The down commences to grow on the goat's back in the month of September, and developes itself progressively until the end of March, when it ceases to grow, and detaches itself naturally, unless artificially removed. To collect the down, M. Polonceau waits for the period when it begins to detach itself, and then the locks of down which separate from the skin with little force are taken off by hand. The down is taken from the animals every three or four days. In general it first begins to fall from the neck and shoulders, and in the following four or five days from the rest of the body. The collection is completed in the space of eight or ten days: sometimes the entire down can be taken off at one time, and almost in an unbroken fleece. The whole of it can also be removed from the animal at one shearing when it begins to loosen. The shearing has the advantage of preserving more perfectly the parallelism of the individual filaments, which much increases the facility of combing and preparing the down for manufacture.

Both as regards England, considered as a manufacturing country, and Australia, as a country whose resources are only just beginning to be developed, we deem the further prosecution of the experiments briefly detailed above to be a matter of considerable importance, and well worthy of the attention of those who are favourably placed for prosecuting them.

We are but too apt to consider things in the state in which we find them, without sufficiently adverting to the causes by which they have been produced, and possibly may be upheld. Nothing is more certain than that our manners, our civilization, and all the good things which are connected with civilization, have, in this European world of ours, depended for ages upon two principles; and were indeed the result of both combined; I mean the spirit of a gentleman and the spirit of religion. The nobility and the clergy, the one by profession, the other by patronage, kept learning in existence even in the midst of arms and confusion, and whilst government were rather in their causes than formed. Learning paid back what it received to nobility and priesthood, and paid it with usury, by enlarging their ideas, and by furnishing their minds.—BURKE.

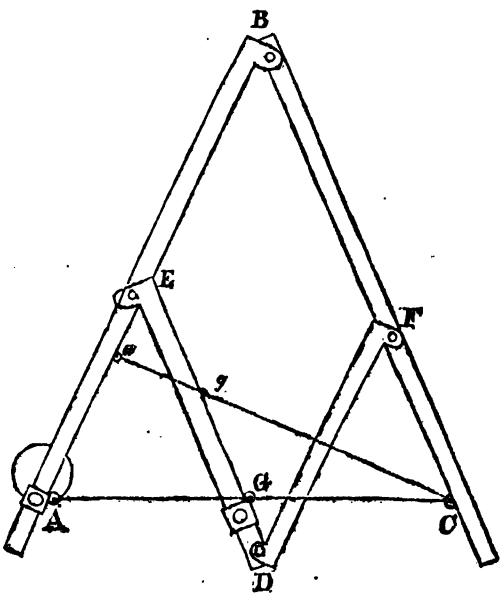
THE PANTOGRAPH.

THE Pantograph is an ingenious and useful instrument, employed by architects, draughtsmen, surveyors, and others, for copying drawings, either on the same scale as the original, or in any given proportion to it, larger or smaller.

If we have a representation—say, of a building; and wish to make another copy of it on a separate piece of paper, and on a similar scale, we can do so by the aid of ordinary drawing instruments, such as a scale of inches and parts of an inch, a pair of compasses, a protractor or sector for measuring angles, a parallel-ruler, a square, &c. But, when a copy is to be made, for instance, only one-half or one-fourth the size of the original drawing, the difficulty becomes much increased, because every line, long or short, vertical, horizontal, or diagonal, must be reduced in the just proportion. It is to meet such cases as these, that the instrument called a PANTOGRAPH has been invented; its name is derived from the Greek, and implies a *universal describer;* and we proceed to the principle on which this instrument acts.

AB, BC, DE, DF, (fig. 1,) are, respectively, four straight rods, jointed or hinged together at the corners in such a manner as to form a parallelogram, BFDE, all the angles of which are capable of altering with a very slight moving force. The joints are made with great care, in order that one ruler or rod may slide round on the other with ease and regularity. In instruments of the best construction, there is a small metal cock screwed to the lower bar of each joint, which supports the upper end of the axis upon which it turns.

Fig. 1.



Suppose the drawing, and the copy to be made from it, to occupy separate pieces of paper: then the two papers are laid flat down on a table, side by side, and the instrument is made to traverse the surface of both of them; a pointed tracer being made to pass over and along every line in the original draught, and a pencil being at the same time employed in drawing similar lines on the copy-paper. The intention of the instrument, then, is to produce lines, by the pencil, exactly similar in position, and bearing a certain fixed proportion, to the lines followed by the tracer. These purposes are effected in the following ingenious manner.

At the point C, in the bar BC, is fixed a small tube, intended for the reception of a tracer or tracing-point; the tracer being so fitted into the tube as to move freely within it, but without shaking. The bars AB and DE are each provided with tubes, shaped somewhat similar to that at C, but attached to a little apparatus which is capable of sliding along the bar, and of being screwed firmly to it at any desired part of its length. The difference between the tube at C and those at G and A is, that the former is for the reception of a tracing-point, and each of the latter for the reception of a pencil; also, that the former is fixed, while each of the latter is moveable along the bar to which it belongs. The pencil, placed in one of the tubes G, A, has frequently a little cup at the top, for the reception of weights to keep the pencil down upon the paper when the instrument is in use. The circular piece seen at A is a flat leaden weight with a brass stem rising from it, which fits in the tubes, in the same manner as the pencil or the tracing-point. This leaden weight has three or four fine points on its under surface, to keep it from shifting upon the paper: and under whatever tube it is placed, it forms a fulcrum, round which the whole instrument moves. The little weights in the cup at the top of the pencil keep the latter pressing down upon the paper, in a position to make a pencil mark whenever the instrument is moved; but, whenever it is desired to lift the pencil from the paper, it can be effected by the following means:—A silk cord is attached to the pencil stem, carried through eyes made for the purpose at the joints E, B, and F, and fixed in a notch at the upper part of the tracer; so that when the silk cord is pressed down by the thumb, the pencil is immediately lifted from the paper.

Such being the arrangement of the instrument, let us assume that the drawing is to be copied on the same scale as the original, all the lines of the one being of the same length as the corresponding lines of the other. Then, the point C, where the tracer is placed, being permanent, the two tubes A and G are slid along their respective bars until the points A, G, and C are all in a straight line, and the distance AG is equal to the distance CG, that is, until the tube G is exactly midway between A and C. The pencil is then fixed in the tube A, and the leaden weight is attached to the tube G. In this mode of arrangement, every part of the instrument revolves round G as a centre, the tracer C passing in contact with the lines of the drawing, and the pencil passing over the paper which is to receive the copy. Then whatever line the tracer C be made to pass over, the pencil at A will make a similar and equal line. That the line will be equal is demonstrable from the mathematical construction of the instrument; for, if the line BE be in the first instance equal to DE, and DE be equal to BF, then BEDF is a parallelogram, and will remain so, however the four angles may be altered. In our diagram B and D are acute angles, and EF obtuse; but, if the reverse of this were the case, the whole figure would still form a parallelogram. Neither is it necessary that all four sides should be of equal length; for if *opposite* sides are equal, *i.e.*, BE equal to DF, and DE equal to BF, the parallelogram will still be preserved. It would be somewhat tedious to follow out the mathematical reasoning by which it is shown that the lines drawn by the pencil are equal in length to those gone over by the tracer; but it will not be difficult for a reader, who knows a little of geometry, to trace the consequences, first, of the parallelism of the opposite bars of the frame BEDF, and, secondly, of the position of the fulcrum G, half-way between the tracer C and the pencil A.

In the next place, we will assume that the copy is to be exactly one-half the dimensions of the original drawing. The arrangement of the instrument will then be such as is represented in our diagram, where the leaden weight, which constitutes the fulcrum—or rather indicates the position of the fulcrum—is attached to the arm AB at the point A, instead of being attached at G. The fulcrum and the pencil have, in fact, changed places, without any change being made in the relative distances of A from G, and of G from C. The instrument, turning

round A as a fulcrum, leads to this necessary result, that the point G, to which the pencil is attached, moves through only one half of the space which the point C traverses in consequence of the distance being only half as great from A as C is from A. Whatever length of line, therefore, the tracer C passes over, the pencil G will describe a line of just half that length. Here, then, the required effect is produced; for the maintenance of parallelism in the opposite bars is just as certain here as in the former case; and the copy resulting from the action of the instrument will exactly resemble the original, on a scale one-half the size. It is necessary to observe, however, that, when the pencil is between the fulcrum and the tracer, as in the present instance, the copy is seen in the right direction or position; but, when the fulcrum is between the pencil and the tracer, as in the former instance, the copy is reversed, the right hand side of the original being represented at the left hand side of the copy, and *vice versâ*.

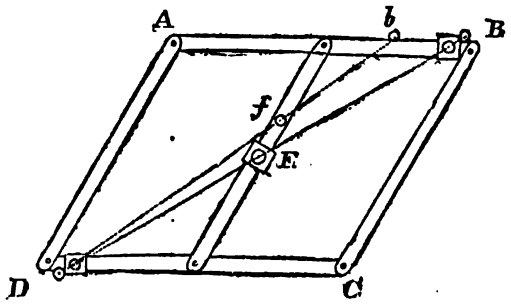
As a third example of the action of the instrument, let us suppose that the copy is to be on a scale only one-fourth of that of the original; in such case the pencil G will still be between the fulcrum and the tracer, but both pencil and fulcrum will be moved and adjusted to different positions on the bars to which they respectively belong. The adjustment must be such, that while C, *g*, and *a*,—the tracer, the new position of the pencil, and the new position of the fulcrum,—are all in a right line, the distance from *a* to C shall be four times as great as the distance from *a* to *g*; or, which amounts to the same thing, the pencil shall be only one-fourth as far distant from the fulcrum as the tracer is. Bearing in mind what has been before stated, it will be understood that all the lines which are drawn by the pencil will now be just one-fourth of the length of the corresponding lines in the original.

Any other proportion may be chosen in a similar way, and the instrument adjusted to that proportion by this formula;—As the distance of the pencil from the fulcrum is to the distance of the tracer from the fulcrum, so is the size of the copy to that of the original. But in using the pantograph it is seldom necessary to make any calculation in this respect; for the arms to which the pencil and the fulcrum are attached are so graduated as to comprise all the proportions likely to be required in practice.

The instrument is supported on six castors, one under each joint, which move freely over the surface of the paper, and give the joints a facility of adjusting themselves to the motion of the pencil. But, however carefully the instrument may be made, it is difficult to use, on account of these numerous joints and castors, which, while they make the instrument heavy for the hand, also render it difficult to mark the minute and gently curving lines, which often require to be copied.

To remedy in some respects these defects, a pantograph has been constructed of the form represented in the annexed cut (fig. 2.) Here we see five bars, moving freely on each other by means of six joints. F is the fulcrum, attached to the central cross-bar, and capable of sliding along it to any one of a scale of divisions engraved on the bar. D is the tube which carries the tracer, and B a moveable tube carrying the pencil. Then, supposing a copy has to be made the exact size of the original, the fulcrum is screwed down exactly at the centre of the cross-bar, as in the diagram; and the pencil B is so adjusted that D F and B shall all be in one straight line. The construction of the instrument involves, as a consequence, that the fulcrum will be exactly midway between the other two points; and, as a second consequence, that the lines drawn by the pencil shall be just as long as those gone over by the tracer. If the copy is required to be only half as large as the original, the fulcrum F is slid up to *f*, twice as far from the bottom of the bar as from the top; and when the pencil B is adjusted to the position *b*, where it will be in a right line with D and *f*, then the distance *f b* will be equal to one-half the distance *f* D, and the lines of the copy will be only one-half as long as the corresponding lines of the originla.

Fig. 2.



It is obvious at a glance that this instrument is more simple in its construction than the former, principally from the circumstance that the fulcrum is always attached to the central bar. When the copy is to be of the same size as the original the fulcrum is fixed midway between the tracer and the pencil; when it is to be larger than the original, the fulcrum is to be nearer to the tracer than to the pencil; when smaller than the original, the fulcrum is to be nearer to the pencil than to the tracer.

Our home is not in this mortal clime.
Our life hath not its bounds in time;
And death is but the cloud that lies
Between our souls and paradise.

MANY persons deprecate the study of the older authors on scientific subjects, as a waste of time and mental energy. To a certain extent, this is correct. To seek in them for that knowledge which they had no means of attaining, would be obviously absurd. No one expects to find a microscopical description of the tissues of the organized body before the era of the invention of that instrument. But it will often occur that men of original views suggest thoughts which they have no power of following out,—which, are, in fact, in advance of their time; and these may be profitably taken up at a subsequent period. Moreover in those departments in which the phenomena are constantly presenting themselves to inspection, an acute observer will frequently seize almost intuitively the essential details, and transmit to posterity accounts of them which may be highly valuable as bases for further inquiries. Thus the descriptions of diseases, founded on symptoms alone, left us by Hippocrates, were probably not surpassed by those of any other physician down to the time of Sydenham; and the descriptions of various species of animals, including not merely their external form, but their internal structure, which were drawn up under the direction of Aristotle, if not actually by him, would, if attended to by subsequent naturalists, have saved them from many errors, some of them egregious ones. We by no means recommend the study of bygone authors to those who desire merely to acquaint themselves with the present state of the science they are pursuing; since to them it would be generally a misemployment of time. But on those who are pursuing the path of original inquiry in any department upon which the means of investigation were within the reach of their predecessors, we would urge a careful research into their contributions, whether of fact or opinion, as a matter of interest as well as of duty. They will frequently thus be able to start from a more advanced position; they will often receive valuable assistance in their progress; and, when they have completed their work, they will be able to reply more successfully to the attacks of those who represent their discoveries as "nothing new."—*British and Foreign Medical Review.*

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 580. JULY 17TH, 1841. {PRICE ONE PENNY.

THE SPANISH TINKER, FROM MURILLO.

MURILLO AND HIS WORKS.

II.

THE most interesting period in the life of a man of genius, is that which includes the struggles of his earlier years: we follow him through all the difficulties of his career, and our sympathy is so much excited that we almost feel our own destiny to be united with his. We rejoice at his success; sorrow at his hopes deferred; but we experience a feeling somewhat akin to disappointment, when, having attained the object of his desires, his life moves on unchequered. We sigh for more adventures; and because we look for the false excitement of romance in the soberness of biographical truth, we often cease to be interested in the remaining chapters of a life which no longer deals in stirring events.

The "gentle Murillo" appreciated too well the pleasures of calm and studious retirement to furnish the materials of personal narrative to his biographer. Our artist having attained that distinction which he merited, has recorded his life in his works, and to them we must now refer for the completion of our sketch; but so numerous are the pictures of this great man, that the notice of a very brief selection must suffice: the reader, at all interested in the subject, will not find it difficult to obtain a view of several of Murillo's pictures contained in many of the Galleries of England, especially Dulwich Gallery, which is open to the public by means of tickets furnished gratuitously at the principal print shops.

It is probably a consequence of not studying in Italy that a national peculiarity of air, habit, and countenance, pervades all the pictures of Murillo: nothing of the academy is to be discovered in his groupes; all his Madonnas and Saints have the Spanish cast of features; and though he adopts a beautifully natural expression, yet there is generally a peasant-like simplicity in his ideas, holding a middle place between the vulgarity of the Flemings, and the elegant taste of the Italians. In his rustics we behold life itself, with a minute attention to costume. Many of his figures of the Saviour are of magic lustre and transparency of hue; but still there is a certain cast and expression of features which appear strikingly provincial to any one to whom Andalusian countenances are familiar. His Baptist and his Saints, particularly San Francisco Xavier, are noble and often sublime pictures; but the sublimity of Murillo neither forces nor enlarges nature; truth and simplicity always prevail; the painter presents what he sees, and not what he conceives. Herein he is distinguishable from his preceptor Velasquez: that great master, by his courtly habits and intercourse with the great, contracted a more proud and swelling character, to which the simple and chaste pencil of Murillo never sought to aspire; a plain and pensive cast, sweetly tempered by humility and benevolence, marks his canvass; and wherever his characters are impassioned, it is by the zeal of devotion—never by the guilty passions*.

One of the finest pictures of Murillo, viz. San Thomas, of Villa Nueva, distributing alms to the sick and the poor, was exhibited a few years ago at the exhibition of the Society of British Artists.

This fine picture (says Dr. Waagen) was formerly in the Church of the Franciscans, at Genoa. It is of the second period of the master, in which, after his return from Madrid with a lively recollection of the pictures of Velasquez, he united great fidelity to nature in the design, and precision in the single forms. The subject was a peculiarly happy one for Murillo. In the head of the saint, in which priestly dignity and gravity are admirably expressed, he has proved how equal he was to such religious subjects, from the legends of the monkish saints. The cripples and the sick afforded him, on the other hand, an ample field to show his skill in representations from common life, which we so highly admire in his beggar boys. The calm intellectual action of the saint forms a striking contrast with the lively excitement of the distressed, whose whole consciousness is concentrated in their eagerness for the momentary satisfaction of their bodily necessities.

Murillo appears never to have quitted Spain,—he did not even make a second journey to Madrid: he was so much averse to pretension and display, that by the time he had attained his fifty-seventh year, his productions were scarcely known in that courtly city. But, in the year 1670, one of his pictures was exhibited there in the great procession of Corpus Christi, to the admiration and surprise of the whole court and city. The King, Charles the Second, invited Murillo to Madrid, and promised to appoint him one of the royal artists. But Murillo, whose love of retirement and attachment to his native city of Seville could not be superseded by any considerations of interest or ambition, excused himself from the proposal on account of his age. He was then requested to send to Court some specimens of his performances, equal in merit to the picture he had exhibited at the solemnity before mentioned, and was promised munificent rewards if he accepted the commission. Murillo could oppose no absolute excuse to this request, but at the same time evaded an immediate compliance by requiring a longer space of time for executing the commission than the impatience and curiosity of the king could dispense with. His majesty, therefore, employed an agent to buy up the pictures of Murillo, and thus some of the finest works of this artist found their way into the royal collection.

Murillo contributed largely to the adornment of the churches of his country. Among others, there is a fine picture at Seville, in the Christening Chapel of the Church of the Miraculous Paduan, representing the Saviour and St. Antonio under a glory of cherubims, the back ground giving the perspective of part of a temple; and by the side of the saint is a table on which is placed a jar with lilies, so accurately represented, that the monks relate the story of a small bird attempting to rest upon the flowers, to pick the seeds; a compliment which has often been paid to many an inferior artist, but which the monks enlarge upon with rapture. But, in the present case, it would be unfortunate if the fame of Murillo depended at all upon such a trifle, because the whole back ground of this picture, including the lilies, was put in by Valdez, a cotemporary artist.

To Murillo also is due the five grand compositions, exhibiting different periods in the life of Jacob. These pictures were originally in the collection of the Marquis de Villamaurigne. The first design was to embody the life of David with the landscapes or back grounds, by Ignacio Iriarte, of Seville, who excelled in that branch of the art. Murillo desired Iriarte to paint the landscapes, and he would afterwards add the figures: Iriarte, on the other hand, contended for Murillo's placing the figures before he filled up the back grounds:—to remedy this difficulty, Murillo executed the whole without Iriarte's assistance, taking Jacob's History instead of David's.

The character of Murillo and the termination of his life, are thus described by Mr. Richard Cumberland.—

Murillo was in his person graceful, of a mild and humble deportment, and an expressive handsome countenance; to the allurements of interest or ambition he was equally insensible; he resisted, as we have seen, the offers of Charles, and at his death was found possessed of one hundred rials, which he had received the day before, and sixty dollars in a drawer: he was in his seventy-third year, when mounting a scaffold to make a painting of St. Catherine, for the convent of Capuchins, at Cadiz, he fell and bruised himself so much as to bring on a violent increase of a disorder which already existed; but such was the delicacy of his nature, that being unwilling to expose his infirmity to the examination of a surgeon, he suffered in silence; and, after some days' anguish, a mortification taking place, with perfect composure he resigned a life, tinged with no other excess, but that of an inherent modesty, to which, having repeatedly sacrificed what is generally esteemed most valuable in life, he lastly gave up life itself.

* See CUMBERLAND'S *Anecdotes of Eminent Painters in Spain.*

THE PHILOSOPHY OF A PEG-TOP.

We trust that our young readers will not be disposed to spin their tops with less zest when we assure them that this toy presents a very difficult problem to the Natural Philosopher: that the theory of its motions has engaged the attention of very eminent men, and that the questions arising therefrom are by no means satisfactorily answered. The boy who loves his peg-top because it is an ingenious toy, will, we hope, be taught by the present article to regard it with a higher degree of interest; and the man (if such there be) who despises the peg-top because it is a toy, will have an opportunity of learning that much philosophy may be gathered from childish things.

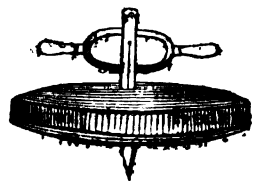
The simple contrivance whereby a top is set spinning, need not be particularly described. The string which is wound round the top and suddenly uncoiled with a jerking kind of action, has the effect of imparting circular motion to the top. Now circular motion is always the result of two forces, one of which attracts the body to the centre around which it moves, and hence is called the *centripetal* force; and the other impels it to move off in a right line from the centre, and this constitutes the *centrifugal* force. In all circular motion, these two forces constantly balance each other: if it were not so, the revolving body must evidently approach the centre of motion or recede from it, according as one or the other force prevailed. This is well illustrated by the action of a sling. When a stone is whirled round in the sling, a projectile force is imparted to the stone; but it is prevented from flying off on account of the counteracting or centripetal force of the string; the moment, however, that the string is unloosed, the stone ceases to move in a circle, but darts off in a right line; because, being released from confinement to the fixed or central point, it is acted on by *one force only, which always produces motion in a right line.*

We need scarcely inform our young reader that it is impossible for him to set up his top so that it shall stand steadily on its point without spinning it. He can never keep the line of direction within its narrow base; but when the rotating motion is once established, there is no difficulty in preserving it for a time in its erect position. Why is this? When a top is spinning we have an example of circular motion round a central axis; and the more rapidly the top spins, the greater is the tendency of all its parts to recede from the axis; or, in other words, the greater is the centrifugal force: the parts which thus revolve may be regarded as so many powers acting in a direction perpendicular to the axis; but as these parts are all equal, and as they pass with great rapidity round the axis, the top is in equilibrio on the end of its axis, or point of support, and thus its erect position is maintained. But the top soon falls, on account of two great impediments to its motion; viz., the friction of the peg on the ground, and the resistance of the air. If the top could be made to revolve on a point without friction, and in a vacuum, it would continue to revolve for ever, and always maintain the same position. But as it is impossible to comply with these two conditions, let us see what results have followed the attempts to reduce the retarding forces as much as possible.

About the middle of the last century Mr. Serson contrived a top, which, instead of the usual pear shape of the common peg-top, presented a horizontal surface similar to what we should obtain by piercing the centre of a disk of wood with an axis or peg. The upper surface of this top was polished, and it presented, while spinning, a true horizontal plane. It continued to spin for thirty-five minutes. On being spun (after the manner of spinning a humming-top), on the table of an air-pump, it was covered with a glass receiver, from which the air was then removed, and the top continued to spin during the space of two hours and sixteen minutes.

Mr. Roberts, of Manchester, a few years ago made a top which would spin in the air forty-two minutes. He made another top, and, in order to give it a neat appearance, covered it with lacquer; when he found it would not spin more than seventeen minutes; he removed the lacquer, and the top continued to spin as long as at first. He found that the lacquer, although it improves the appearance of surfaces, yet it imparts to them a vast number of minute roughnesses, scarcely, if at all, appreciable by the touch, yet sufficient to offer so much additional resistance to motion in the air.

Fig. 1.



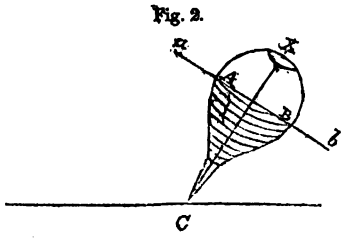
The accompanying figure represents a top made by Mr. Evans, of Swansea. Its shape is that of a disk of about four and a half inches in diameter, but rather thicker at the centre than at the edges; the central part through which the spindle passes is about an inch in thickness; and at the edge the thickness is about five-eighths of an inch. The top is put in motion like a common humming-top, by means of a yard of cord passed through the hole in the upright spindle. A rim of lead passes round the top and is inserted to the depth of about three-fourths of an inch. The steel peg on which the top spins is about seven-eighths of an inch long; it is not brought to a very fine point, because, in spinning, it is apt to drill a hole through the surface upon which it is placed. The spindle or axle is of wood, and nearly two inches long: the cord is wound tightly round this spindle; one person holds the two handles firmly, and a second draws out the cord to its full length. The cord should not be drawn out too rapidly at first, but with a speed gradually increasing. The best surface to spin it on would probably be a small agate cup, but, in the absence of this, we may employ a plate or saucer, over which a little oil has been rubbed. Mr. Evans says, "that by a simple contrivance, namely, sticking a knitting-needle through a reel of fine cotton, containing 250 yards, and attaching it to the top at full speed, I have been enabled to ascertain to a great nicety the speed of mine that spins forty minutes; the cotton was run off the reel in somewhat less than one minute; and from frequent trials, I find it makes no less than 4500 revolutions in the minute."

We will now return to the common form of the peg-top, and endeavour to explain the means by which the top is enabled to rise from the oblique position (which it always more or less assumes when first set spinning,) into the truly vertical position which produces the effect called *sleeping*, where the motion is so steady that it scarcely seems to move.

When the top is *sleeping*, its centre of gravity is situated perpendicularly over its point of support; but, in rising from an oblique to a vertical position, the top must have its centre of gravity raised. The force which effects this change has been a subject of contest in the philosophy of the peg-top, and we believe that Dr. Paris was the first to offer a satisfactory explanation thereof. He considers it to depend upon the form of the extremity of the peg, and not upon any simple effect connected with the rotatory or centrifugal force of the top. If the peg were to terminate in a fine, that is to say, in a mathematical point, the top never could raise itself.

Let A, B, C, (fig. 2,) be a top spinning in an oblique position, having the end of the peg C on which it spins brought to a fine point. It will continue to spin in the direction in which it reaches the ground, without the least tendency to rise into a more vertical posi-

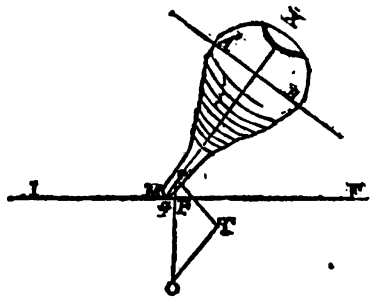
Fig. 2.



tion, and it is by its rotating or centrifugal force that it is kept in this original position: for if we conceive the top divided into two equal parts, A and B, by a plane passing through the line X C, and suppose that at any moment during its spinning the connexion between these two parts were suddenly dissolved, then would any point in the part A fly off with the given force in the direction of the tangent, and any corresponding point in the part B with an equal force in an opposite direction; whilst, therefore, these two parts remain connected together, during the spinning of the top, these two equal and opposite forces, A and B, will balance each other, and the top will continue to spin on its original axis. Hence the rotating or centrifugal force can never make the top rise from an oblique to a vertical position.

But in order to be satisfied that the change in position depends on the bluntness of the point, let A B C (fig. 3), be a top spinning in an oblique position terminating in a very

Fig. 3.



short point with a hemispherical shoulder P *a* M. It is evident that in this case, the top will not spin upon *a*, the end of the true axis X *a*, but upon P, a point in the circle P M to which the floor I F is a tangent. Instead, therefore, of revolving upon a fixed and stationary point, the top will roll round upon the small circle P M, on its blunt point, with very considerable friction, the force of which may be represented by a line, O P, at right angles to the floor I F, and to the spherical end of the peg of the top: now it is the action of this force, by its pressure on one side of the blunt point of the top, which causes it to rise in a vertical direction. Produce the line O P till it meets the axis C; from the point C draw the line C T perpendicular to the axis *a* X, and T O parallel to it; and then, by a resolution of forces, the line T C will represent that part of the friction which presses at right angles to the axis, so as gradually to raise it in a vertical position; in which operation the circle P M gradually diminishes by the approach of the point P to *a*, as the axis becomes more perpendicular, and vanishes when the point P coincides with the point *a*, that is to say, when the top has arrived at its vertical position, where it will continue to *sleep* without much friction, or any other disturbing force, until its rotatory motion fails, and its side is brought to the earth by the force of gravity.

There can be no doubt that this explanation is correct, and however difficult it may appear to the general reader, yet it is worthy an attentive consideration. The following remarks by Dr. Arnott will greatly tend to illustrate and simplify the theory of Dr. Paris.

While the top is quite upright, the extremity of its peg, being directly under its centre, supports it steadily, and although turning so rapidly, and with much friction, has no tendency to move from the place; but if the top incline at all, the *edge* or *side* of the peg, instead of its very *point*, is in contact with the floor, and the peg then becoming as a turning little roller, advances quickly, and describes a curve somewhat as a skaiter's foot does, until it come directly under the body of the top as before. It thus appears that the very fact of the top inclining, causes the point to shift its place, and to continue moving until it come again directly under the centre of the top. It is remarkable that even in philosophical treatises of authority the standing of a top is still vaguely attributed to *centrifugal force*. And some persons believe, that a top spinning in a weighing scale, would be found lighter than when at rest; and others most erroneously hold that the centrifugal force of the whirling, which of course acts directly away from the axis, and quite equally in all directions, yet becomes, when the top inclines, greater upwards than downwards, so as to counteract the gravity of the top. The way in which centrifugal force really helps to maintain the spinning of a top is that when the body inclines or begins to fall in one direction, its motion in that direction continues until the point describing its curve, like the foot of a skaiter, has forced itself under the body again.

The gyrations of the peg-top depend upon the same principle as that which produces the precession of the equinoxes; viz., an unequal attractive force exerted upon the revolving mass. In the one case, this is known to arise from the action of the sun and moon on the excess of matter about the equatorial regions of the earth; in the other, from the parts of the top being unequally affected by gravity while it is spinning in an inclined or oblique position. Sir John Herschel says:—

The precession of the equinoxes consists in a real, but very slow motion of the pole of the heavens among the stars, in a small circle round the pole of the ecliptic. Now this cannot happen without producing corresponding changes in the apparent diurnal motion of the sphere, and the aspect which the heavens must present at very remote periods of history. The pole is nothing more than the vanishing point of the earth's axis. As this point, then, has such a motion as described, it necessarily follows that the earth's axis must have a conical motion, in virtue of which it points successively to every part of the small circle in question. We may form the best idea of such a motion by noticing a child's peg-top, when it spins not upright, or that amusing toy the te-to-tum, which when delicately executed, and nicely balanced, becomes an elegant philosophical instrument, and exhibits in the most beautiful manner, the whole phenomenon, in a way calculated to give at once a clear conception of it as a fact, and a considerable insight into its physical cause as a dynamical effect.

The following ingenious and useful remarks we borrow from Dr. Paris.

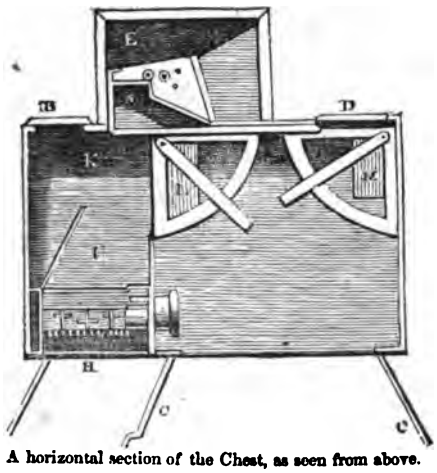
If a top could be made to revolve on a point without friction, and in a vacuum, in the case of its velocity being *infinite*, it would continue to revolve for ever, in the same position, without gyration. If the velocity were *finite*, it would for ever remain unchanged in position, in the event of the centre of gravity being directly over the point of rotation. In any other position (supposing its velocity very great, although not infinite) there would arise a continued uniform gyration, the line which passes through the point of rotation and the centre of gravity always making the same angle with the horizon, or describing the same circle round the zenith. But in all artificial experiments the circumstances are very remarkably changed; if, indeed, the centre of gravity happens to be situated perpendicularly over the point of rotation, the top will continue quite steady, or *sleeping*, as it is termed, till nearly the whole of its velocity of rotation is expended. In any other position the top begins to gyrate, but reclining at all times on the outside of its physical point of gyration, the top is uniformly impelled inwards, and this, (when the velocity is considerable, and the point broad,) acts with force sufficient for carrying the top towards its quiescent or *sleeping* point; but when the velocity is much diminished, this power becomes feeble, the gyrations increase in diameter, and the top ultimately falls.

As the peculiar office of man is to govern and defend society; that of woman is to spread virtue, affection, and gentleness through it: she has a direct interest in softening and humanizing the other sex. Man is too rugged to be even just towards those whom he only loves, but does not respect: he is too powerful to be swayed by those whom he only respects, but does not love. The empire of woman must be won, not solely through his sense of justice, but by the grace and delicacy, the tenderness and purity she diffuses through life; but her rights will neither add dignity to her social influence, nor bring practical security to her domestic station, except as they are found really to promote the virtue and happiness of society.—*Woman's Rights and Duties.*

ON CHESS. No. XIV.

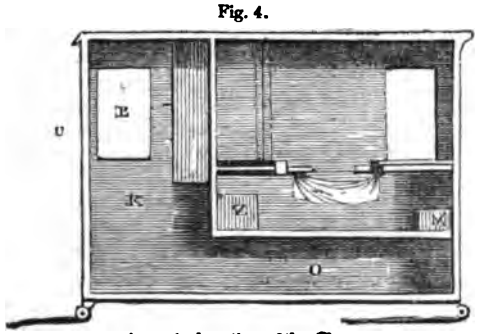
The Automaton Chess-Player. 2.

Fig. 3.



A horizontal section of the Chest, as seen from above.

Fig. 4.



A vertical section of the Chest.

We propose on the present occasion to describe the external appearance and the mode of performance of the chess automaton, as detailed by M. Windisch soon after its first introduction to the public. The reader will fancy himself a visitor to M. de Kempelen's study, as described in our last article.

The first object that catches the eye on entering this room is the automaton, placed opposite the door. The chest to which it is fixed is three and a half feet long, two feet deep, and two and a half feet high. It stands upon four castors, by which means it may be easily moved from one place to another. Behind this is a figure, the size of life, dressed in the Turkish fashion, seated in a wooden chair, attached to the chest, and which moves with it when it is wheeled about the room. This figure leans with its right arm upon the table, and in its left hand holds a Turkish pipe, in the attitude of a person who has just been smoking. It plays with its left hand,—a circumstance which the inventor says was due to his own inattention, and not discovered until the work was too far advanced to rectify it. "But what does it signify," asks Windisch, "whether Titian painted with his left hand or his right?" Before the automaton is a chess-board, screwed down to the table, to which its eyes are constantly directed. M. de Kempelen opens the front door of the chest and takes out the drawer at the bottom. The chest is divided by a partition into two unequal parts: that on the left hand is the narrower; it occupies little more than one-third of the chest, and is filled with wheels, cylinders, levers, and other pieces of clock-work. In that on the right are also seen some wheels, spring-barrels, and two horizontal quadrants. There is also a box, a cushion, and a tablet, on which are traced some characters in gold. The inventor takes out the box, and places it on a small table standing near the machine: he also removes the tablet, which is to be placed on the chess-board as soon as the game is over, to enable the automaton to answer such questions as may be put to him.

In the drawer above-mentioned are red and white chess-men on a board, with which they are taken out and placed on the side of the chess-board. There is also a small oblong box, containing six small chess-boards, each showing the end of a game. Any one of these situations being set up on the automaton's chess-board, he undertakes to win, whether he play with the red or the white men.

In showing the interior of the machine the inventor not only opens the front but also the back doors of the chest, by which the wheel-work becomes so exposed as to afford the most thorough conviction that no living being can possibly be concealed; and in order to make this exposure more complete, the inventor generally places a wax light in the chest, so as to illuminate every corner of it. He then lifts up the automaton's robe, and turns it over his head, so as to display the internal structure, which consists of levers and wheel-work, of which the body of the automaton is so full that there is not room to hide a kitten. Even his trousers have a little door in them, which is opened to remove even the shadow of suspicion.

M. de Windisch assures us that the inventor does not shut one door as soon as he opens another,—"no, you see, at one and the same time, the uncovered automaton, with his garments turned up; the drawer and all the doors of the chest open." In this state the inventor moves it about, and submits it to the inspection of the curious.

After allowing sufficient time to examine it closely he shuts all the doors, and places it behind a balustrade, which prevents the company from shaking the machine by leaning upon it while the automaton is at play, and leaves room for the inventor to walk about, and approach the cupboard on either side, but he never touches it except to wind up the works. He then introduces his hand into the body of the automaton, in order to arrange the movements properly, and concludes by placing a cushion under that arm of the automaton with which he plays.

The inventor places the little box (before spoken of) on a table near the machine: there is, however, no visible communication between the automaton and the table or the little box; but while the automaton is playing, the inventor frequently opens this box, to examine its contents, which are unknown to the company. It was generally supposed that this box was merely a plan calculated to distract the attention of the spectators, but the inventor assured M. de Windisch that it was so indispensable that the automaton could not play without it.

We are now prepared to see the machine play. When the automaton is about to move he lifts his arm leisurely, and directs it to the piece which he intends to play: he suspends his hand over it,—opens the fingers,—takes it,—places it on the proper square,—and again removes his arm to the cushion. In capturing a piece he first removes his adversary's man, and then substitutes one of his own. A slight noise of wheel-work, somewhat resembling that of a repeater, is heard during every move of the automaton. This noise ceases as soon as a move is made and the automaton's arm replaced on the cushion; and not till then can the adversary make a fresh move. The automaton always claims first move, and moves his head so as to look over the whole board whenever the adversary makes a fresh move. He nods his head twice when the adverse queen is attacked, and thrice when check is given to the king.

If the adversary makes a wrong move, the automaton shakes his head, returns the piece to the square from which it had moved, and then plays his move; so that the adversary loses his move as a punishment for his inattention or wilful mistake: this often happens, from a desire on the part of the player or the company present,

to see the automaton detect a mistake, and take advantage of it. This condition is one among others which facilitates the winning of games by the automaton.

The inventor requests those who play with the automaton to be careful to place the pieces exactly in the middle of the squares, lest the automaton in opening his hand to take the piece should miss it, or receive some damage. A move once made on either side is not allowed to be retracted.

The machine cannot make above ten or a dozen moves without being wound up again; but it is evident that the simple operation of winding up the springs of the arm of the machine can produce no other effect than that of restoring to it the *vis motrix*, without having any influence on its *vis directrix*. In this latter quality consists the principal merit of the machine, and here also lies the mystery; for the operation of winding up is the only one the inventor is seen to perform, and this the only time when he touches the machine. Mathematicians of all countries have examined it with the most scrupulous attention without being able to discover the least trace of its mode of operation.

I have frequently been in the apartment, (says Windisch,) where the automaton was at play, with twenty or thirty more persons, who kept their eyes rivetted on the inventor. We never saw him approach within two or three yards of the machine, nor do aught else than look occasionally into the box before mentioned; nor ever betray himself by the least motion which to us appeared capable of influencing the machine in any shape whatever.

To show also that magnetism has nothing to do with the movements of the chess automaton, the inventor permits any one to place the most powerful magnet on the machine.

The automaton also performs the feat of moving the knight over the sixty-four squares of the chess-board in as many leaps. One of the spectators places a knight on any square: the automaton immediately takes it, and observing the knight's peculiar move, begins at the square occupied by the knight, and causes the piece to cover the sixty-four squares in the same number of moves without missing one, and without touching one square twice: this is ascertained by one of the spectators putting a counter on each square he touches.

Such, then, is an account of the appearance and performances of the chess automaton, as exhibited soon after its first invention. We have given our description in the present tense, as being better calculated to afford the reader an idea of the extraordinary sensation caused by this very remarkable machine.

Of all his inventions M. de Kempelen prided himself least on his automaton chess player. He frequently spoke of it as a mere trifle, and though considering it merely as a machine, (without reference to the plan adopted for putting it in motion,) it certainly possessed some mechanical merit, yet that the greater part of the reputation it had acquired was owing to a happy deception.

M. de Kempelen was far from coveting the celebrity which his automaton obtained for him, nor did he desire that it should be considered as a prodigy. He wished it to be understood that the wonderful effects of his machine were due to a certain boldness of thought on his part, and a happy choice of means employed in the deception. He was unwilling to part with his secret, and refused considerable offers made to him by persons who hoped to make their fortune by exhibiting it. He even threw aside the automaton in order to devote his mechanical abilities to new researches and inventions of a more serious nature, and more calculated for public utility; and although frequently visited by travellers from different countries, who wished to see his famous automaton, he declined showing it, stating that it had received damage in being moved about from place to place. He had, in fact, partly taken it to pieces, and left it for some years in a dilapidated state, in which condition it would have remained, but for the following circumstance:—the Grand Duke Paul of Russia, with his consort, under the travelling titles of the Count and Countess du Nord, paid a visit to the Emperor Joseph the Second, at the Court of Vienna, who, wishing to gratify as much as possible his distinguished guests, bethought himself of de Kempelen's machine. In compliance, therefore, with the desires of his sovereign, de Kempelen got the automaton into working order within the space of five weeks. It excited the greatest surprise and admiration in the minds of the Count and Countess, who, as well as the principal nobility, advised the inventor to send it to some of the chief cities of Europe. The emperor approved of this plan, and gave de Kempelen leave of absence for two years for that purpose. The chess automaton was therefore despatched on its travels. In 1783 it first appeared at Paris with the greatest applause: it was beaten at chess by the professors at the Café de la Régence, but this circumstance by no means detracted from the merit of the machine, if such we may call it; nor did it tend to elucidate the mystery which was the grand cause of the excitement, which everywhere attended the presence of this automaton.

De Kempelen found the automaton so profitable an exhibition in Paris that he determined to visit London, where we hope to find him in our next article at No. 8, Savile Row, Burlington Gardens.

IN no province of science, in no part of the vast and diversified scenery of nature, are the various attributes of God more wonderfully and impressively displayed than upon the bright field of astronomy. In the contemplation of the brilliant scenery of the starry heavens, the man whose mind is stored with the rich and varied results of modern discovery has an advantage over those who are uninitiated into these sublime mysteries of nature, attended with correspondent obligations of piety and devout admiration. When an ignorant and uninstructed person looks up to the ethereal concave, he sees nothing but a vast canopy mantling the globe on which he dwells, and studded with so many spangling points. To him it is nothing but a scene of gay confusion, in which he can discover no law beyond that of a periodical appearance above the horizon, nor conceive any end suitable to the variety and the magnitude of the means which seem to have been employed. But the man of science sees with other eyes; he looks up to that glorious theatre of wonders, which has been spread above him and around him, with other notions, and, unless his mind be blinded by prejudice, and incased in impiety, he cannot fail to be led to other reflections. Where the untaught eye saw nothing but a promiscuous assemblage of twinkling lights, he beholds the most perfect regularity, harmony, and order. Where the ignorance of the former could perceive only the dispositions and arrangements of chance, his knowledge can trace the footsteps of the most consummate design. To his enlightened vision the speck enlarges into a world, and the spark swells into a luminary. While conducted by the hand of science, he ranges over the fields of ether, and follows the planets in their course; while he contemplates these vast bodies wheeling through the sky, under the influence of a combination of forces, which can be reduced to the laws of the most rigid demonstration, spinning each upon its own axis, and at the same time travelling with inconceivable velocity along its orbit; while he passes on from star to star, from system to system, the centre of one being probably only a planet moving with its attendant satellites around some more distant centre: and when the line of scientific observation having now failed him, his imagination takes the helm and conducts him among those remoter worlds, which as he advances are found to rise in thicker clusters over the face of the abyss; while he is engaged in this voyage of discovery, or rather in this tour of observation over the manifold works of God, at every step must be rising higher his conceptions of the power and majesty, of the wisdom and goodness of that Being, the very threshold of whose dominions he has scarcely been able to pass. Overwhelmed with the immensity and variety of the objects of his contemplation, he sinks down in the conscious acknowledgment of his littleness, and seeks repose to his wearied faculties in the homage of silent adoration.—DAVIES's *Handmaid*.

BEET-ROOT SUGAR.

I. The Varieties and Cultivation of the Beet.

We often find that plans formed by individuals for the gratification of their own private ends lead to results which they little contemplated, and which frequently tend to the public good; thus, Bonaparte, influenced by bitter hatred towards England, strove to cripple her commerce by endeavouring to render France quite independent of the British colonies in obtaining a supply of the necessaries of life. One of his plans was to obtain sugar from *Beet-root*, and although the feeling with which this plan was prosecuted has long since passed away, yet the results of numerous experiments made in conformity with it belong to the cause of science, and can neither be forgotten nor despised.

Nearly a century ago, Margraf, a German chemist, found that sugar may be obtained from the white beet-root in greater quantity than from any other European plant. Achard and other experimentalists subsequently investigated the subject, with a view to determine the best mode of obtaining sugar from the beet. It will, therefore, be desirable to preface our notice of this branch of industry with a brief account of the principal varieties of the beet, in order to indicate the qualities in which the white variety differs from the others.

The botanical name for beet is *Beta*, so called from the resemblance which the plant is thought to bear, while the seed is swelling, to the form of the Greek letter β. It is ranked among the class *Pentandria*; order *Digynia*. There are three or four species, each of which presents several varieties. The *Beta cicla*, or common culinary beet, includes the common green-leaved beet, the large white beet, and the chard, or great Swiss beet. The *Beta major*, or *Great German Beet*, commonly called *Mangel-wurzel*, presents the dark-green-leaved, the light-green-leaved, and the red-veined-leaved varieties. Lastly, there is the *Beta rubra*, which includes the common red beet and two or three other varieties nearly allied to it. The principal features presented by these three species are the following:—The *Beta cicla* has a small oblong white root, producing from its crown many large, oblong, succulent leaves, on broad foot-stalks, and erect branching seed; stems two or three feet high, garnished with close setting leaves, and long spikes of greenish flowers, which are succeeded by plenty of ripe seed in autumn. The *Beta major* has a large, long, reddish, or sometimes whitish-red root; and very large, oblong, thick, succulent, leaves. The *Beta rubra* presents a large red eatable root, crowned by many large, oblong, reddish-purple leaves; and when it shoots, sends up erect stalks and branches, terminated by long spikes of flowers and seed.

The purposes to which these varieties of beet are applied, or rather, we should say, the modes in which they have been applied as food, are many. In some instances the root itself is cut up and eaten; in others, the stalks and mid-rib of the leaves are stewed and eaten like asparagus; in a third kind the leaves, being large and succulent, are occasionally used in the manner of common beet, and particularly to boil as spinach, or to put into soups. As food for cattle, the variety termed *mangel-wurzel* has been much used of late years; and the reader may frequently see, on the pier or quay of Hungerford market, immense heaps of this root, landed from barges and vessels, for the London market.

It does not form part of our plan to extend farther the notice of beet generally; but we shall now proceed to the consideration of the mode in which one particular variety of the plant is cultivated, for the production of sugar. The researches of Achard and Gottling have combined to educe a regular and systematic train of operations.

Achard recommends that the soil for the growth of the beet should be one in which wheat has been grown. A low situation, not exposed to great or lasting drought, is to be preferred. The ground should be ploughed thrice over, and as deep as the nature of the soil will admit. Immediately after the third ploughing, which should be done in April or the beginning of May, the ground is to be brought smooth by the harrow; and by means of a rake, whose teeth are distant from nine to twelve inches, lines are to be traced along the surface. Then, by drawing the rake in transverse lines across these, the ground becomes divided into squares, measured by the distances of the rake's teeth. Into each intersecting point of the lines thus drawn, one capsule containing several seeds is to be inserted, to the depth of an inch; a process which may be easily attended to by children. When the plants have germinated and six or eight leaves are formed, the ground must be weeded, and if the young plants be too much accumulated on a particular spot, the superabundant ones are to be pulled out. After the ground has been once cleared of the weeds, the plants grow up so speedily, that their leaves soon completely cover the ground; and thus absolutely prevent the growing of any more weeds. In consequence of this circumstance, an acre of ground cultivated with beet occasions no more trouble till the time of gathering; which circumstance greatly facilitates the cultivation, because the time of the cultivator, who is then busied in his corn harvest, is not required to be at all employed on this object.

Respecting the choice of seed, care must be taken that it be not obtained from roots which, after their germination, have been transplanted on seed-beds; but from such as remained on the spot where they grew from the capsules, till autumn, and which likewise have produced the true oblong, thin, conical roots, the best suited for preparing sugar. This is necessary, because the seed of untransplanted beet produces roots more partaking of the spindle form, which, as we have remarked, is that which has been found most profitable.

Among those varieties of the beet which have that shape of root deemed most favourable for the production of sugar, Achard enumerates four of different colours. Some have a pale red rind, and are internally quite white; others, with a rind usually of a deeper red, have internally reddish stripes; others again, of a more or less deep red, have red circles; and lastly, there are some which, with a rind almost white, have the internal parts yellow. These varieties have different degrees of value, in the preparation of sugar. That which is white, with a light red rind, deserves the preference above the others, yielding much sugar, and an agreeably sweet syrup. The red-striped or circled roots, whose rind is of a darker colour than the kind just spoken of, afford sugar; but the syrup is bad, on account of its retention of the taste of the root, which cannot be removed but by expensive chemical processes. Those with a white rind and yellow interior afford much crystallizable sugar; but are not calculated for the production of moist or raw sugar, on account of the exceedingly disagreeable taste of the syrup.

Achard made some very ingenious inquiries into the effect of *light* on the development of a saccharine principle in the beet. It is known that asparagus becomes more sweet and pleasant to the taste when kept excluded from the light than when exposed to it. Endive, too, has a tough harsh-tasted leaf when exposed to the free action of light; whereas, when the inner leaves are defended, by tying the outer ones together, they change their colour, which passes from green to yellow; the firmness of their texture is weakened; they become tender, soft, brittle, and full of juice; and their taste, which was before exceedingly disagreeable, becomes mild and pleasant. Reasoning from these facts, he inquired, not only whether any particular principle, such as the saccharine, was affected by light, but also whether all parts of a plant were similarly affected, or whether differ-

ent members of the plant. His researches led him to these two conclusions:—1. That the absence of light augments the saccharine liquor in almost all roots, or in the genus arising therefrom; that its presence diminishes it; and that to shade the whole surface of a piece of ground, on which such roots are raised, adds very much to the increase of their saccharine matter. 2. That light has not the same effects on the different parts of the same plant; for, in the case of the *fruit*, so far from being influenced in the same way as the root, the saccharine matter is augmented by the presence of light, and, on the contrary, is not only retarded but diminished by the absence of light. As a further support of his opinion, he states that the upper parts of carrots, parsnips, beet, and other vegetables, which are not covered by the earth, lose the sweet taste naturally belonging to them; while the root, which is enveloped in the ground, possesses much of the saccharine principle.

The way in which Achard proposes to take advantage of these effects is, to shield as much as possible the beet root from the action of light during growth, and to expose the upper part of the plant freely to its influence, in order that the saccharine principle, naturally belonging to the plant as a whole, may settle down more and more completely in the root. It is for a similar reason, that he prefers the spindle-shaped roots to those of a more globular form, as being more likely to keep from the influence of light. Of the different varieties of root which were tried, Achard found sugar to result more abundantly from those which were of small size, and consequently had grown near one another; or whose heads had been buried underground; or which had flat heads, and therefore, from which the leaves had not been taken off; or, finally, which possessed a conical or spindle-shape, and had not been transplanted, but had received their full growth in the places where they germinated from seed. On the contrary it was found that only pulp and ill-tasted syrup were formed from roots which were strong and thick, and consequently grew at a greater distance from one another, or from those whose heads were large and round.

It therefore appears, that in order to produce roots which shall yield a remunerating quantity of saccharine matter, the plants should be planted with that degree of proximity to each other, that the leaves shall spread over the whole surface of the ground, and form a kind of umbrageous canopy. These leaves are not to be cut until about the month of September or October, when the root itself is taken up.

The reader will then understand, that according to the experience of Achard, the cultivation of the beet for the production of sugar is not a difficult process, considered in an agricultural point of view; but that care is necessary to keep the root excluded from the action of light. The plant will then attain, by the month of October, the condition which is required for this purpose. We shall in another paper, therefore, trace the routine of processes by which the sugar is obtained from the beet-root.

HYMN.

God of Nature, God of love!
Seen below, around, above,
Traced in every varied form,
Heard in every awful storm;
Glorious in the noonday light,
Mild and beautiful in night;
Now, O bounteous Lord! to Thee,
Low we bend the suppliant knee.
'Tis thy goodness glows around,
Decks the fields, and clothes the ground;
'Tis thy breath, in gentle gales,
Sweeps along the dewy vales;
'Tis thy bounteous hand distils
Healthful waters from the hills;
To Thee, O God! our lives we owe,
And every blessing here below.

THE TRUE USE OF TALENT.

THERE can be no doubt that the great primary end, to which every man of talent should consider his powers, in whatever line of intellect or attainment they may predominantly lie, as solemnly and sacredly pledged, is the promotion of the glory of the great Author of his being. This was the very object for which such an order of mind was bestowed upon him, and proportioned to the superior energy and capability of that mind is unquestionably the force of the obligation by which he is bound to give its exertions a sound and salutary direction. This is the central point, to which every ray throughout the whole circle of human endowments should steadily and uniformly converge. It is true indeed that the object may be promoted in various ways—that it may be advanced by different habits and modifications of intellectual exercise. In establishing the glory of the Deity as the great standard to which all the efforts of the mind should be ultimately referred, there is no necessity that the faculties should be cramped in their exercises—that they should be confined in their attainments, partial in their application, and timid in their researches. With this object, on the contrary, their most unfettered developement—their most extensive and loftiest excursions, so far from being incompatible, are in the highest degree congenial. In the grand system of the moral universe, while the glory of its Author, as the sun, occupies the centre, there is range enough both for the flaming comet, which wheels through its distant round—still however paying the homage of a strict and undeviating gravitation—and for the milder planet, which appears to pursue a more regular and uniform course. Whatever may be the amount of the talents which any individual has received, there is abundant scope for their exercise, and for carrying on such a profitable negotiation in the varied intercourse of human society, as may enable him, on the great day of account while he feels himself to be at best an unprofitable servant, to return them, in the language of the parable, with usury to Him that gave them. As the scenes of nature are infinitely diversified—as its laws require to be investigated and its beauties to be displayed, by the exercise of appropriate powers of mind, and as the attributes of Deity admit of various modes of illustration, there is obviously opportunity afforded for the developement of every order of talent, and for the indulgence of every pure and well-regulated taste, while the end is still uniform and the same. Science, history, philosophy, poetry, and the fine arts may be cultivated in all their departments with all the enthusiasm which the most devoted adherent of these pursuits may desire, without any necessary dereliction of that primary design to which they must all be subordinate. The intellect may prosecute its researches and delight itself with the discoveries of truth; the judgment may arrange her materials and form them into trains of reasoning; the memory may accumulate her treasures and make still fresh additions to her stores; the imagination may embody her visions, and fancy may weave her garlands; while the eye of the mind is still firmly fixed upon that which gives a character of sacredness to every effort. All that is really wanted is simplicity of purpose and a sublime rectitude of aim. The spirit of man was never designed to be stretched upon a Procrustean bed, to the form and dimensions of which the elastic powers of the soul are to be rigidly adapted and measured. But while the mind may justly assert its native liberty of action—while it may refuse to have its kindling energies smothered beneath the choking layers of antiquated notions and predilections, and to shape its conceptions into a servile conformity to the model of prevailing and ordinary sentiment—while it is privileged to expatiate with freedom over the varied field of thought, there must still be a point with which it will be found to move in harmony. Though it may rise above the influences of earth, there must still be a luminary in the heavens—there must be a fixed, a never-varying regard to the glory, the majesty, the will and the purposes of its beneficent Creator, whose sway it must unreservedly own; and until it has been brought under this legitimate and salutary control it is as incapable of guiding itself aright as the fabled Phaeton of directing the chariot of the sun.—DAVIES's *Handmaid*.

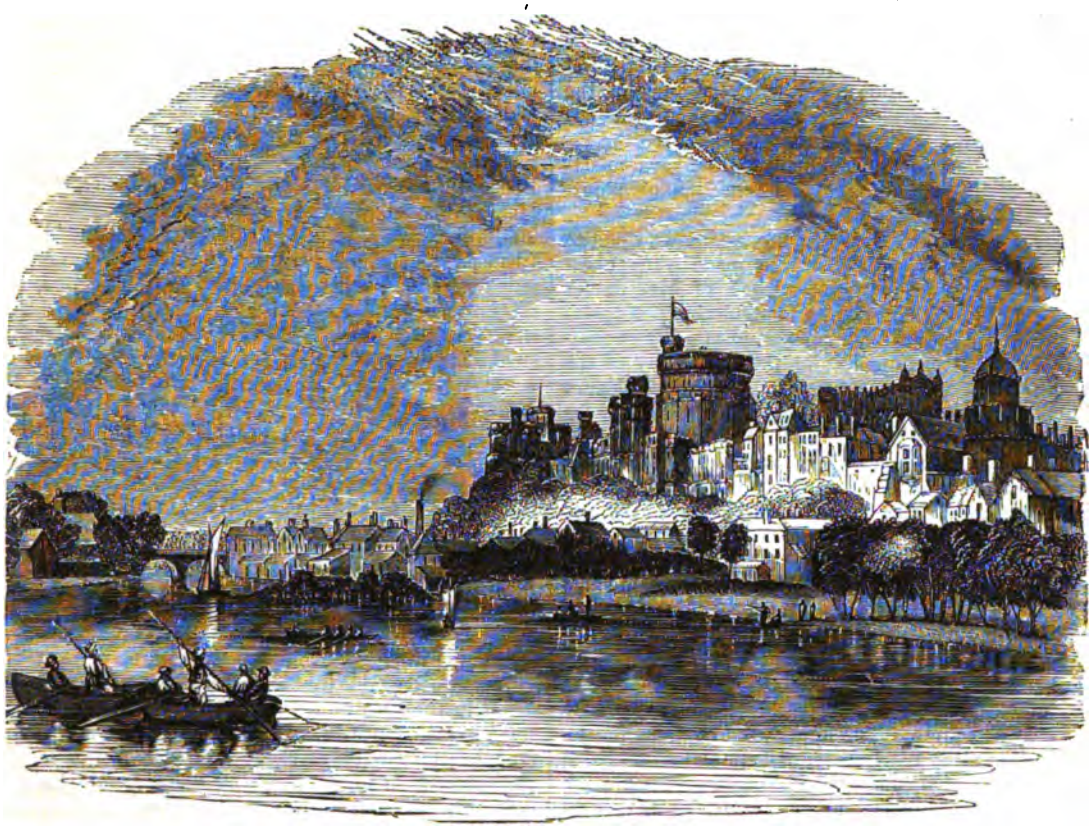
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 581. JULY 24TH, 1841. Price One Penny.

THE BANKS OF THE THAMES. V.



WINDSOR CASTLE.

Here hills and vales, the woodland and the plain,
Here earth and water seem to strive again;
Not chaos-like together crushed and bruised,
But, as the world, harmoniously confused
Where order in variety we see,
And where, though all things differ, all agree.
Here waving groves and chequered scene display,
And part admit, and part exclude the day;
There interspersed in lawns and opening glades,
Thin trees arise that shun each others' shades.
Here in full light the russet plains extend;
There wrapt in clouds the bluish hills ascend:
Even the wild heath displays her purple dyes,
And midst the desert fruitful fields arise,
That crowned with tufted trees and springing corn,
Like verdant isles the sable waste adorn.
Let India boast her plants, nor envy we
The weeping amber or the balmy tree,
While by our oaks the precious loads are borne,
And realms commanded which those trees adorn.—POPE.

WHEN Mr. Ireland wrote his description of the Thames, nearly half a century ago, he said, "Were I to fix on a spot for a picture, it should be at turning the bend of the river at Clewer, when by the evening sun the parts are so beautifully discriminated, and so happily massed by the shadows, as to form a splendid object, in which beauty and dignity are equally combined." How far the progress of building during the last fifty years may have lessened the picturesque beauty of the scene, would perhaps be estimated differently by different persons; but there can be no doubt that the view of Windsor Castle, and other places near Clewer, is one of the most interesting which the banks of the Thames afford. The whole neighbourhood teems with associations: Windsor Castle, the residence of so many sovereigns; Eton, with its distinguished seminary; Datchet Meads, and Herne's Oak, with their Shaksperian associations; all arrest the attention of the Thames tourist at this spot.

The Thames passes between Windsor and Eton, having the former town on the south bank, and the latter on the north. The town of Windsor has frequently the additional epithet of "New" attached to it, to distinguish it from Old Windsor, a village a mile or two distant. Like many other towns in England, it seems to have owed its origin to the castle built near it.

The Castle was commenced by William the Conqueror, who chose the summit of a lofty hill for the site, partly as a matter of security, and partly for the pleasantness of the situation. He enclosed parks, made large forests for hunting, and enacted laws for the preservation of game. Henry the First added a chapel and other apartments, as well as walls and ramparts. This monarch, as well as John, and the first two Edwards, made Windsor a frequent place of residence. Edward the Third pulled down nearly the whole of the Castle, and erected the greater part of the present splendid structure. The work was accomplished under the direction of William of Wykeham, afterwards Bishop of Winchester, and one of the most able architects of his time. He received *seven shillings per week* as his professional emolument,—a large sum in those days. It is said that he was on the brink of disgrace by having cut in a stone

of the new building the words, "This made Wykeham," a sentence capable of a double meaning, but which he explained as intended to imply that the castle was the making of his fortune. St. George's Chapel was begun by Edward the Third, and finished by Edward the Fourth, who was buried there, and whose remains were found in 1789, in a coffin beneath his monument.

Nearly all the successive monarchs down to the time of Elizabeth made some additions or improvements to the Castle; and indeed the same may be said of subsequent sovereigns. Henry the Seventh made additions to the chapel and upper ward; Henry the Eighth rebuilt the principal gateway; Elizabeth constructed the terrace on the north side of the Castle; and Charles the First also made some alterations. During the fury of the Republicans, the Castle suffered much damage; but Charles the Second, on his restoration, repaired the injuries which it had sustained, furnished the royal apartments in a costly manner, formed a collection of paintings, and also a magazine of arms.

Passing over the intermediate monarchs, we come to the time of George the Third, who made very great alterations under the superintendence of Mr. James Wyatt. These consisted chiefly in rendering the apartments habitable, and introducing the more modern comforts into their arrangements; in the rebuilding of the great staircase; the restoration of the pointed style of architecture, which Charles the Second had displaced for others inconsistent with the general character of the building; the thorough repair of St. George's Chapel; and the preparation of a mausoleum for his Majesty and his descendants. After the death of that monarch, his successor George the Fourth planned other and still more extensive changes, upon which Sir Jeffry Wyatville was engaged throughout the king's reign. Even since that period, considerable alterations have been made, and great outlay has been incurred in making the palace fit for the residence of the sovereign of a great country.

The buildings composing the Castle are about a mile in circumference, and are contained in or surrounded by three wards or courts. The upper ward contains on the north side the state apartments, and the hall and chapel of St. George. On the east and south sides are the sovereign's private apartments and those of the royal household. The old principal gateway, being low and inconvenient, was replaced by a new one, of noble and imposing appearance, opposite to the grand entrance of the state apartments, and directly in a line with the Long Walk in the Great Park, which thus forms a magnificent avenue in the approach to the Castle. On either side of the gateway is a tower, one called York and the other Lancaster tower. Around the south and east sides of the court runs a fine corridor, more than five hundred feet in length, forming a medium of communication between the different buildings and apartments which surround it.

As we cannot attempt in this place to describe the state apartments which surround the upper ward, we shall pass to the lower ward. This is much more spacious than the other, and is divided into two parts by St. George's Chapel, behind which are the residences of the dean and canons. The apartments of the minor canons, clerks, and other ecclesiastical officers, are situated at the west end of the chapel, in what are termed the Horseshoe Cloisters. The collegiate chapel of St. George, considered as an ecclesiastical establishment, consists of a dean, twelve canons, seven minor canons, thirteen lay clerks, ten choristers, a steward, a treasurer, and inferior officers. Various towers, appropriated to different purposes, occupy portions of the buildings surrounding the lower ward.

The middle ward is occupied almost solely by the celebrated Keep, or Round Tower, the most conspicuous object in the Castle. It contains the apartments of the constable or governor of the Castle, who has the command of the Castle, its garrison, and magazine of arms, holds a court of record, and is judge of the pleas between parties within the precincts of Windsor Forest. In ancient times the custody of distinguished state prisoners was committed to his care. John, king of France, David, king of Scotland, the Earl of Surrey, the Earl of Lauderdale, the Earl of Lindsay, and the Marshal de Belleisle, are among the distinguished men who were at different periods confined in this keep. In the view enjoyed from the battlements of this tower, the windings of the Thames, with the succession of villages, mansions, and detached farm-houses, the luxuriant landscape of the parks and forest, the bird's-eye prospect of the town, and a vast tract of country extending to the hills in the remote distance, combine to form a panorama which, for beauty and magnificence, is considered to be almost unequalled. Twelve counties are included within the range of view, viz.: Middlesex, Essex, Hertford, Bedford, Buckingham, Berkshire, Oxfordshire, Wiltshire, Hampshire, Surrey, Sussex, and Kent.

Two parks are attached to the royal domain. The Little Park contains about five hundred acres, and is four miles in circumference, extending on the north and east sides of the Castle to the river Thames. It was enclosed with a brick wall by William the Third, and is chiefly stocked with sheep, cattle, and a small herd of red deer. In this park, which abounds with hares, George the Third frequently took the diversion of coursing; and on the south-east side of it stood a venerable tree, known by the name of Herne's Oak, and which, according to tradition, was the identical tree mentioned by Shakspere. "Master Page" informs us that

> There is an old tale goes, that Herne the hunter,
> Some time a keeper here in Windsor Forest,
> Doth all the winter time, at still midnight,
> Walk round about an oak with great ragged horns,
> And there he blasts the tree, and takes the cattle,
> And makes milch-kine yield blood, and shakes a chain,
> In a most hideous and dreadful manner.

It has been said that Herne, who was keeper of the forest in the time of Queen Elizabeth, having committed some great offence, was hung on this tree; and that the credulity of the times easily worked on the minds of the ignorant to suppose that his ghost should haunt the spot. It was cut down a few years ago, and converted into various little articles of furniture and ornament, as Shaksperian relics. Frogmore Lodge, formerly belonging to Queen Charlotte, and afterwards the property and residence of the Princess Augusta Sophia, is separated from the Little Park only by the London road.

The Great Park adjoins the south side of the town. At one time it consisted of four thousand acres, and was fourteen miles in circumference; but King George the Third set apart about half of it, for the formation of experimental farms, and other purposes connected with agriculture. The scenery of this park, which is stocked with several thousand heads of deer, is both varied and picturesque. It is intersected by several roads, the principal of which, known as the Long Walk, skirted by an avenue of majestic trees, commences at the new entrance gateway of the upper ward, and extending nearly three miles in length, terminates at the summit of a bold rise, commanding a superb view of the Castle, Eton College on the other side of the river, and the country beyond them. At various parts of the park have been erected lodges or cottages, as retired summer residences for different members of the royal family; among which were the Royal Lodge and Cumberland Lodge. One of the rides in the park forms the principal approach to Virginia Water, a beautiful lake at the southern extremity of the park, and terminating at a fanciful building called the fishing temple. This spot was a favourite resort of his Majesty George the Fourth; and was by him adorned with miniature frigates and pleasure boats. Several bridges, one of them with a single arch of a hundred and sixty-five feet span, cross this fine piece of

water, which, near the road to Basingstoke, forms a beautiful cascade, and then flows on in a stream that winds through the western part of Surrey, and falls into the Thames near Chertsey.

To enumerate the various points of interest and attraction presented by Windsor Castle, would be wholly out of place in a series of articles such as the present; we must therefore proceed onward in our tour. Passing under Windsor Bridge, and along the margin of the playing fields of Eton College, the bend of the Thames presents a fine view of the north front of Windsor Castle. Winding round the Little Park, the river pursues its course to Datchet, a pretty village on the northern shore; at a short distance from which is Ditton Park, the residence of Lord Montagu. The original mansion, a venerable structure which had been enlarged at various times since its first erection in the reign of Edward the Third, was destroyed by fire in 1812. On its site has been built, from the designs of Mr. Atkinson, a handsome castellated edifice, with turrets and battlements, surrounded by a moat, and having its principal entrance defended by an embattled gateway, flanked with towers. A drawbridge crossing the moat, connects the house and grounds with the park.

On the opposite bank of the river soon appears Old Windsor, which has been termed a "village of villas." Near the margin of the river is situated Old Windsor Manor House, partly surrounded by a moat, and exhibiting on the water-front the appearance of an ancient manorial edifice. But the most conspicuous object at Old Windsor is Beaumont Lodge, built a few years ago on the site of an older structure erected in the early part of the last century. The mansion is remarkable as presenting a specimen of what has been termed a new style of architecture, viz. the British. The principal front is of considerable elevation; its chief feature is a corridor consisting of coupled columns, or rather columns in imitation of twin trees growing from one root; between the stems is introduced the shield of a knight; and the capitals are formed after the caps worn by the Knights of the Garter, the star of the order forming a centre; and the whole is finished with Ionic volutes, and emblematic figures of the arms of England. The metopes are ornamented by the George and Collar; the decorations of the frieze over the columns are composed of ostrich feathers, tied with ribbons and blended with acorns; while the continued frieze is made up of naval and military trophies. This attempt to form a national style of architecture was made by a Mr. Emlyn of Windsor; but it does not appear to have met with encouragement.

THE OIL-BEETLE AND THE BLISTERING-BEETLE.

THE genus of coleopterous insects, named MELOE by Linnæus, belonging to the section Heteromera and the family Cantharidæ, includes some very remarkable insects, which may be generally described as having the body large and distended, the wings entirely wanting, and the elytra short, oval, and folding partially over each other at the base: the antennæ are eleven-jointed, of nearly equal thickness throughout, or dilated and knotted in a singular manner, or elbowed in the centre, especially in the males. The body is generally of a deep black, bordering in many species on bluish and violet, and very much punctuated. These insects are of a comparatively large size: they are very inactive, crawling sluggishly upon the ground, in the fields, tilled lands, on the edges of highways, or among low herbage upon which they feed; but they seem to prefer sandy or calcareous places exposed to the sun. When seized or disturbed they emit, from the articulations of each knee of their legs, a viscous fluid, similar to oil, of a yellow colour and disagreeable odour. This oil was once highly celebrated for its supposed efficacy in rheumatic pains when used as an embrocation to the parts affected: for this purpose also oil was obtained by crushing the insects in a press. This oil was also used as a specific against madness, and farriers in some cases employed oil in which these insects had been macerated. These insects, of which eight or nine species occur in Britain, are most frequent in spring and autumn, and some of them, especially the type, *Meloe proscarabæus*, are not uncommon. They possess to a certain extent the vesicatory powers of the Cantharides, and are used in some parts of Spain instead of the true blister-fly. The females, when filled with eggs, become greatly dilated, and exceed the males in size. Goëdart preserved a female proscarabæus, and fed it with anemone and ranunculus leaves. Between the 12th of May and the 12th of June it laid 2212 eggs, besides about as many more which were not counted. These eggs were produced at two separate times, the insect depositing the eggs in a hole in the ground, which it had made with the posterior extremity of its belly. These eggs were yellow, and resembled small grains of sand pressed together. The larvæ, according to this observer, have the body long, cylindrical, sprinkled with hairs, composed of eleven rings, almost equal, and with an oval head, furnished with two eyes and two longish antennæ. They have six legs, of rather large size, compared with the body, which is terminated with two long appendages, in the form of silky hairs. Goëdart was not able to rear these larvæ, although he fed them with a variety of animal and vegetable matter. This want of success has attended the efforts of many other entomologists.

These larvæ are supposed by some observers to be parasitical on the bodies of winged insects. Degeer having noticed that a strong resemblance existed between the larvæ of Meloe and a small insect which he found adhering to the body of a fly resembling the humble bee, placed some domestic flies among the larvæ of the Meloe, and found that in less than half an hour a very great number of these larvæ had become attached to the breast and belly of the flies. After some vain efforts to get rid of the larvæ the flies perished on the second or third day, and the larvæ abandoned the body. Having been furnished during many days with living flies, they fastened on them. As soon as a fly passed near them there were always some which directly seized it by the foot or wing, and never quitted their hold until in a favourable situation to attack the body. Degeer found, however, that they did not increase in size, and, neglecting to supply them with victims, they all died.

Other observers have contended that the larvæ spoken of above were not those of the Meloe, but of some other insect; but as the information does not rest upon Degeer's information alone, the early history of the Meloe must be considered as quite unsettled.

The *Meloe vesicatorius* of Linnæus (*Cantharis officinalis* of Geoffroy) is the celebrated blister-fly, or Spanish fly, so much used in medicine. It is distinguished generically by the possession of complete wings and wing-covers, by having the joints of the tarsi entire, and not bilobed, and the thorax nearly ovoid: the body is long and narrow, with the head rather longer than the thorax: the second joint of the antennæ is very small. This insect varies very much in its size, being sometimes not more than half an inch long, while others are twice that length. It is of a rich green and golden colour, very shining, and delicately punctured, with the antennæ (except the first joint) black. It is very rare in this country, but has been seen occasionally near Cheltenham and elsewhere.

The Cantharis is one of those insects which have been most anciently and most universally known. Physicians, who were the first natural philosophers, and the first observers of nature, have made mention of the cantharides in the remotest times. But they have only considered them

under that relation which was most suitable to their own profession, and as furnishing to medicine one of its most powerful agents. The naturalist, who is less anxious about becoming acquainted with the medicinal virtues of the dead, than with the peculiar habits of the living cantharides, is yet very far from having acquired in this respect certain, extensive, and satisfactory information. The only species which has been deemed to be endowed with useful properties has caused a forgetfulness of all the others which compose the entire genus; and all that we know in general respecting these insects is, that in our European climates they live on plants, devour the leaves of certain trees, shun the cold, appear at the commencement of spring, and disappear at the beginning of autumn. We are therefore unable to do any more than present some general ideas respecting the cantharis which is peculiarly consecrated to the purposes of medicine.

It is more than probable that experiments on insects relatively to their utility in medicine and the arts, have been too much neglected in general. Their diminutive size has doubtless caused them to be too much despised. It cannot, however, be doubted that there must be a great number of them whose virtues are at least equal to those of the cantharides, and many others which are less acrid and less caustic, might in many cases be taken internally, with less danger and a greater chance of success. We may rest assured that all the species which belong to the genus *Cantharis* possess pretty nearly the same virtues as the species which is most generally known, and consequently in all the countries in which they are found, the same usage might be made of them. Among the insects taken from other genera, which might furnish caustic and irritating particles, and which might be substituted for the cantharides to a certain extent, we may range *meloe, mylabris, carabus, tenebrio, cicindela, scaribes, coccinella*, &c. The cast skin of the majority of the caterpillars produces a dust, which scattered by the winds, raises pustules on the face with which it comes in contact. The same effect is occasioned by the hair and wool of certain phalenæ when they are touched. Marian found at Surinam some species of the larvæ of lepidoptera, which one could not touch without being suddenly attacked with inflammation.

The early history of this insect is but little known. The female deposits her eggs separately, forming them into an agglutinated mass, and burying them underground. The larvæ have a soft body, of a yellowish white, composed of thirteen rings; the head rounded, somewhat flat, and furnished with two short antennæ: the mouth is provided with two tolerably solid jaws, and four antennulæ. They have six short and scaly feet. They live in the earth and feed on various roots. When they have attained their full growth, they change into the nymph state in the earth, and do not come out of it until they have assumed the perfect insect form.

The cantharides are abundant in Spain and in the south of France, especially in the month of June, when they assemble for the purpose of pairing. This is the time when they must be seized, especially at the hour of sunset or sun-rise, when they are in a somewhat torpid state. They are found upon ash-trees, Tartarian honey-suckles, lilacs, rose-trees, poplars, elms, &c., the leaves of which they devour, and when this sort of food is wanting, they throw themselves upon corn and grass, and commit great damage. As they appear in large troops or swarms, and are accompanied by a very penetrating odour, somewhat similar to that of mice, it is not difficult to discover and collect them, provided certain precautions are adopted which should never be neglected. The odorous particles exhaled by them are so very corrosive, that people have been violently affected whilst gathering them during the heat of the day with bare hands, or even when they have fallen asleep under trees where swarms of them have gathered. The persons who collect them are protected by masks and gloves.

There are two modes of collecting cantharides. The first and most simple consists in spreading under the tree which harbours these insects several cloths on which they are made to fall by shaking or beating the branches. The insects are then gathered on a hair sieve, and held over the vapour of boiling vinegar, which kills them; or they are collected on a linen cloth, which is folded and steeped several times in vinegar and water. This is the method most generally adopted.

The second method is to spread cloths about the tree, and the vapour of vinegar is diffused by causing it to be boiled in earthen pans placed in chafing-dishes. The trees are then shaken to cause the cantharides to fall: they are picked up immediately, and enclosed for twenty-four hours in vessels of wood, earth, or glass.

When the insects are dead it is necessary to dry them thoroughly, otherwise they would contract a most detestable odour, and be rendered unfit for medicinal purposes. For this purpose they are exposed to the heat of the sun, or of a stove, or they are placed in a well-aired attic on hurdles covered with linen cloth or paper. They are occasionally stirred about with a stick, or with the hands protected with gloves, for without this precaution the workmen would be exposed to the most painful sensations. When properly dried, the cantharides are so light that fifty of them weigh scarcely a dram.

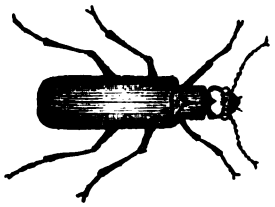
The insects are preserved in boxes or bands lined with paper, and firmly closed. A part of our supply of cantharides is from Astracan and Sicily: but though bearing the name of Spanish blistering flies, the greatest quantity is obtained from St. Petersburg; and the Russian insects are said to be superior to those from Sicily and France. Cantharides are liable to the attacks of many insects and worms, but as these feed only on the inert part, they do not destroy the vesicant property.

Chemists have subjected cantharides to analysis, and have separated from them a peculiar substance, which is called *cantharadin:* this is the vesicating or blistering principle of the insect. It is a white substance under the form of small crystalline plates; when pure it is insoluble in water; it is soluble in ether, in boiling hot alcohol, and in the fixed oils. Some chemists regard it as a kind of animal camphor.

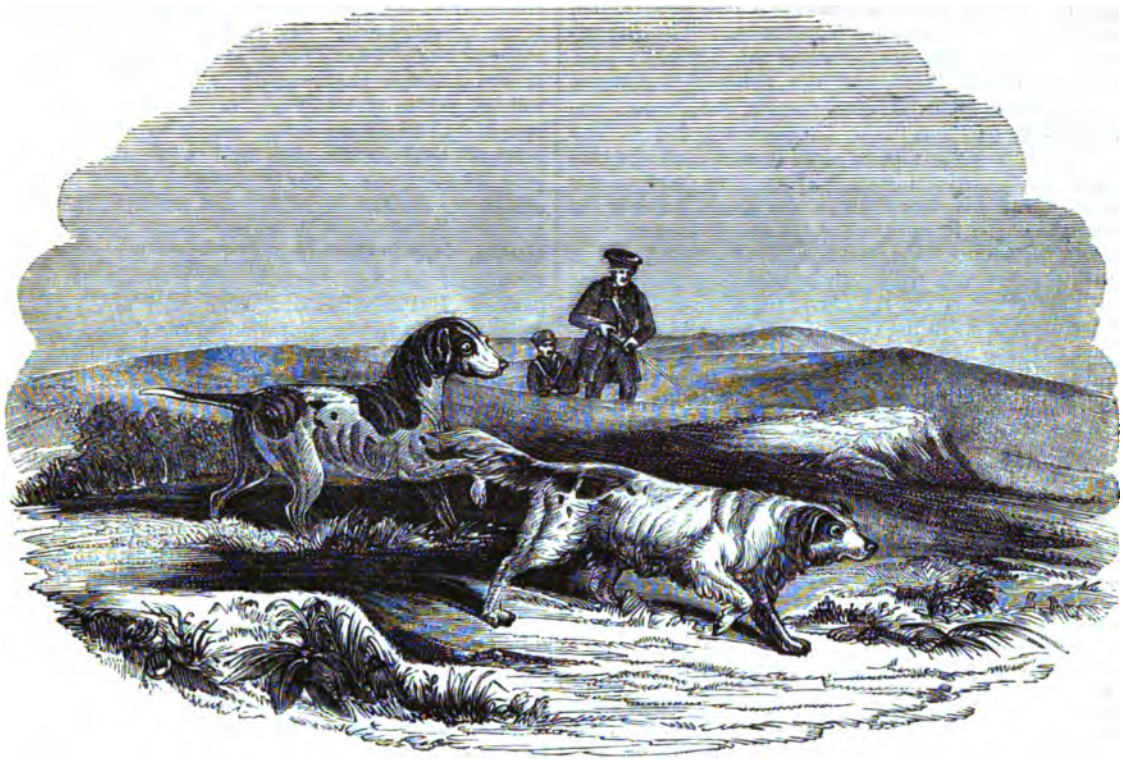
Cantharides also yield to analysis the following substances:—1. A greenish fluid oil, insoluble in water, but soluble in alcohol. This is inert. 2. A black matter, also inert; it is soluble in alcohol but not in water. 3. A yellow viscid matter soluble both in water and in alcohol. This has no blistering property. 4. A little fatty matter; phosphates of lime and magnesia; acetic and uric acids also occur in cantharides.

The external application of cantharides is made by reducing them to powder, mixing them up with some fatty substance and applying a plaster thus formed to the surface of the body. It immediately begins to act, and detaches the outer skin from the dermis with great rapidity. When given internally it is in the form of an ethereal or alcoholic tincture; but it is a medicine requiring the utmost degree of caution and circumspection in its administration; and the cases in which it is proper to give it as an internal remedy are very few.

Meloe proscarabæus, Linn. THE OIL BEETLE.



Meloe vesicatorius, Linn. THE BLISTERING-BEETLE.



POINTER AND SETTER.

RURAL SPORTS FOR THE MONTHS.

JULY.

The present month is not distinguished for any special employment which can be designated a rural sport: the angler continues to ply his vocation, and we might dwell on many interesting particulars in connection with this sport, but as we have already given a brief outline of his proceedings, and are engaged in a course of articles descriptive of several of the most highly-prized among the inhabitants of our rivers, it appears unnecessary to devote further space to this subject. The approaching season, however, presents so many attractions to the sportsman, and enters so largely into his anticipations of pleasures to come, that we shall not be considered as deviating from our course, if we also look forward to the "Shooting season," and make a few observations on the sagacious and truly interesting animals employed by the shooter to secure the different kinds of game which will shortly become the object of his pursuit.

England has long been celebrated for the superior excellence not only of its horses but of its sporting-dogs. Our grey-hounds, fox-hounds, and harriers are unequalled, and that they are so results from the care which is taken to keep the species distinct. The instinct and the fine olfactory powers of these animals are remarkable; but in the pointer and setter the instinct manifested is still more extraordinary. These latter animals appear to be endowed with their peculiar qualities especially for the service of man, while those of all other animals are calculated for the supply of their own individual wants, as well as being secondarily of importance to the human race.

When the intellectual endowments of the domesticated races of dogs are permitted to weigh in the scale,—when we begin to consider the faculties which the bounty of nature has bestowed upon them,—the sincerity and disinterestedness of their attachment,—the sagacity, strength, velocity, courage, and perfect obedience which they proffer to man,—we cannot refuse them our admiration and affection. To what other species could we look for voluntary association with our fortunes? Which of them would, like the dog, lend us the full use of senses so acute as his? Which can rejoice in our joy, be vigilant and bold in our defence, obedient to order, faithful in our adversity, understand our least words and signs, and die on our graves from pure attachment? These qualities, we all know, dogs possess. Here, then, we find the source of that consideration which is granted them by all men near a state of nature; and although conceded by them with niggardly hands, the wild man of the old world, the stoical hunter of the new, the half-frozen Esquimaux, and the savage of Australia, differ only in their mode of acknowledgment from the expressions of favour with which the drover, the shepherd, the sportsman, and the fine lady of civilized society regard them.

As the dog alone, of all the brute creation, voluntarily associates himself with the condition of man's existence, it is fair to presume also that he was the first, and therefore the oldest of man's companions; that to his manifold good qualities the first hunters were indebted for their conquest and subjugation of other species. We do even now perceive, notwithstanding the advance of human reason and the progress of invention, that in a thousand instances we cannot dispense with his assistance.—Lieut.-Col. Smith.

Doubtless it required, at first, a long course of patient education and careful management to produce even a distant approach to the perfection of the present breed of pointers; but certain it is that an instinct favourable to "pointing" must have existed in this race of dogs in particular, for of no other animal can it be said, that with proper training he would form a substitute for the true pointer.

The pointer was originally a native of Spain; and among our English breed, such dogs as have the most Spanish blood in their veins are esteemed the best. The Spanish pointer is about twenty-one inches in height. He has a large head, is heavily made, broad-chested, stout-limbed, with a large dew-lap; his eyes are full and widely separated, and his nose broad; his tail is straight, short and thick, and his ears large, pendulous, and fine; the finest dogs have a round and not a flat foot. When pointing, he raises one of the fore-legs, and stands on three only, with his face and tail in a line with his back. This is the position he always assumes when he comes gradually upon the scent; but whenever, by running with the wind, or any other circumstance, he comes suddenly upon game, he will stand in the most extraordinary

attitude, and will have, sometimes a very picturesque, sometimes a very grotesque appearance. The disposition to stand at the sight of game is manifested even by puppies of this breed, and is a remarkable instance of the transmission of propensities, which are undoubtedly in part acquired. And when a dog of this breed is incapacitated through age from maintaining his "point" in the natural posture, he will sit down on his haunches with his face towards the game, turning his head occasionally to see whether the gun be approaching.

Notwithstanding the acknowledged excellence of British pointers, it is frequently lamented by true sportsmen, that there is not the same care taken to keep the species distinct as in the case of hounds, and in consequence that the number is comparatively few where the qualities of that race remain unmixed with those of other dogs. Many dogs, esteemed by their owners as first-rate, are found to bear little resemblance in point of shape and appearance to the true pointer, and if, as it is maintained by high authority in the sporting world, the instinct of pointing be an inextinguishable and indestructible principle in the blood of the pointer, and that the further any dog is removed from the original Spanish pointer the worse the dog is, then such dogs, however they may be improved as to beauty of form, will necessarily possess a commixture of qualities rendering them inferior to the original breed.

The trouble in training mongrel dogs is double that of true pointers. The usual price paid for "breaking a dog," as it is termed, is from two to five guineas. Much of the future usefulness of the dog depends on the temper and judgment of the person employed in educating him. To give our uninitiated readers a specimen of the shooter's vocabulary we quote a list of some of the words made use of by the breakers and sportsmen to the dogs.

"*To-ho*" spoken in an under-tone, when the dog is ranging, is a warning to him that he is close upon the game, and is a direction to him to stand. There is no necessity for using it to a dog that knows his business. Spoken in a peremptory manner it is used to make the dog crouch when he has flushed game, or been otherwise in fault. "*Down-charge*," or "*down-to-charge*," is used to make the dog, whether it be near or at a distance, to crouch when the shooter charges, that the dog may not flush game when the shooter is unprepared. When the dog will not crouch, but continues beating, the leg-strap may be put on. "*Take heed*," and "*Be careful*," are used when the dog ranges over ground where it is customary to find birds. "*Take heed*" is a word of correction; "*Be careful*," of encouragement. The former is used by way of caution or notice to prevent the dog flushing birds by running over the ground too fast; the latter is likewise a caution, but used when the dogs beat slowly or carelessly. "*Ware fence*" is used to prevent dogs passing a fence before the gun. The dog should never, on any account, leave an inclosure until his master has left it. "*Ware*," or "*Beware*," is used to rate a dog for giving chace to a hare, birds, or cattle, pointing larks, or approaching too near the heels of a horse. "*Seek*" is the direction to the dog to look for a dead, or wounded bird, hare, or rabbit. "*Dead*" is used to make a dog relinquish his hold of dead or wounded game.—*Oakleigh Shooting Code.*

The *Setter* is endowed with sagacity and intelligence equal to that of the pointer, but is reckoned inferior in fineness of scent, and is less staunch. It partakes of the character of the pointer and spaniel, from which it has most probably descended. The setter will face briars and gorse bushes, and also delight in water, in which respects it has the advantage of the pointer who shows a repugnance to them; thus the setter is preferred on marshes for snipe shooting, and also in heavy covers; while the pointer is far superior on open ground, and will endure the greatest share of fatigue.

The disposition of the setter is mild and gentle, and it shows much attachment and gratitude towards a kind master. In colour it is in general white, with large spots or blotches of liver colour or red. The hair is not so smooth as that of the pointer, but possesses the wavy character of the spaniel's; the ears also resemble those of the latter animal. Mr. Bell gives an interesting account of one of these animals as to its domestic qualities. It was a setter bitch, which, although not regularly trained, was an excellent dog in the field. The animal appeared to be always on the watch to evince love and gratitude to those who were kind to her, and the instinct of attachment was in her so powerful that it showed itself in her conduct towards other animals as well as to her human friends. A kitten lately taken from its mother, was brought up with the dog, and at first showed all the usual horror on the approach of its companion. But Juno seemed determined to conquer the antipathy, and by the most winning and persevering kindness and forbearance—advancing and receding as she found the waywardness of her new friend's temper required—she completely attached the kitten to her; and as she had lately lost her puppies, and still had some milk left, the pair were often seen lying together before the fire, the kitten sucking her kind foster-mother, who was licking and caressing her as her own offspring. On another occasion when a Spaniel bitch had puppies, of which all, excepting one, were destroyed, Juno would take every opportunity to steal the remaining one from its mother's nest, and carry it to her own, where she would lick and fondle it with the greatest tenderness. The mother, also a good-tempered creature, as soon as she had discovered the theft, hastened, of course, to bring back the little one, which was again to be stolen on the first favourable opportunity; until, at length, the two bitches killed the poor puppy between them as they were endeavouring each to pull it from the other; and all this with the most perfect mutual good understanding.

Such anecdotes might be multiplied with respect to the next species of sporting-dog we have to notice, *i.e.*, the *Spaniel*, for of all dogs, this is perhaps the most affectionate in its nature, the most grateful for kindness, and the most patient in enduring ill-treatment. The spaniel is the best dog for beating covers, provided he can be kept near the gun. He is generally expected to give tongue when game is flushed; some spaniels will give notice of the game before it springs, which is not amiss where wood-cocks only are expected to be found; but wood-cock and pheasant shooting are usually combined, and the latter sport cannot be conducted too quietly. Whatever the species of game may be spaniels are the best dogs, where the cover is so thick that the shooter cannot keep his eye upon the dogs.

The dogs called *Retrievers*, are those employed to find lost birds. Newfoundland dogs are reckoned the best for this purpose. A good retriever has a very fine sense of smelling, and is as sure to follow the track of the wounded bird, on whose scent he is first put, as a blood-hound that of a human being or deer.

SCIENCE has scattered her material benefits so lavishly wherever she has been in presence, that no small number of her followers—and all the multitude—have left off gazing on the resplendency of her countenance in their eager scramble for her gifts. From those who frequent her courts with such views, she veils her brightness and withdraws her spirit, leaving them to grovel, poring like Mammon on the golden pavements of her mansion, while their ears are deaf to its celestial harmonies, and their mouths closed to its breathings of paradise.—*Quarterly Review.*

I KNOW that eastern winds have power
To nip the young and tender flower;
Clouds may obscure the rising day,
And its young glories fade away:
And so, my hopes may meet with blight,
My early days seem dark as night;
Blessings may leave me one by one,
And yet I shall not be alone.
God will be with me, and his love,
Through weary years of care, will prove
Amid the desert one green spot,
One hope that still deceiveth not

BEET-ROOT SUGAR.

II. The Early Modes of Producing Sugar from the Beet.

In our last article on this subject, we briefly enumerated the different kinds of *Beta*, or Beet-root, and also the mode which had been recommended for the cultivation of those varieties of the root which abound most in saccharine matter. We now proceed to notice the process of obtaining the juice from the root, and of converting it into sugar. The researches detailed in the last paper were chiefly those of M. Achard; but the method of obtaining the sugar, which we shall describe, is that adopted by Professor Gottling, as being rather more easy in practice than that of Achard.

Gottling recommends the roots to be taken out of the ground about the end of September or the beginning of October, in order to have good weather for drying them. They should be well washed as speedily as possible, and their small fibres should at the same time be cut off; as likewise such part of the root as in growing had risen above the surface of the earth. The roots are to be afterwards wiped with a cloth, and laid upon a dry floor; their heads are to be cut off and given to the cattle; and the roots should be then sliced lengthwise down the middle, each half again cut into thin slices, and loosely hung upon strong thread upon nails, in an airy chamber or place sheltered from rain. The slices should not be placed too near together, lest they spoil, nor too many be put upon one string; it is advisable to turn the strings upside down once or twice, to effect a speedier drying. In the course of ten or twelve days they become so dry that the strings may be removed nearer together, in order to allow fresh roots to be hung up, if there should be scarcity of room. Instead of placing the sliced roots upon strings, stages may be made in outbuildings; and the slices may be laid on netted frames. If the drying season be far advanced, or a frost be expected, the beet-roots should not be exposed to the external air, but should be dried in a warm room on strings or netted frames, resembling the flakes formerly used in Yorkshire for drying oat-cakes.

The slicing of the beet-root may conveniently form an evening occupation; and no more should be sliced at once than can be strung or placed on frames to dry, as it is not advisable to let the roots remain in slices long in a heap. The roots may be dried in stove-rooms by artificial heat; but great care is in that case required to keep them free from being smoked or burned, as the sugar would hence become dark-coloured, and of an unpleasant flavour. It is better therefore not to dry the roots by means of stoves, unless in case of necessity, such as where the frost may prevent the roots from being dried in the open air. Where opportunity will not permit the beet-roots to be sliced soon after being taken out of the earth, they should be placed in cellars and covered with straw, or put into holes in dry sandy earth, and preserved till wanted.

The roots should be dried throughout, and not partially. If they appear grey on the outside, they should be white or red on the inside; and, if chewed between the teeth, they should have a very sweet taste, free from must or acidity. When dry, the roots are ready to have the sugar extracted; and, to effect this, it is necessary to provide three wide but shallow wooden tubs, made of oak, ash, willow, or some other non-resinous wood. Each tub should have a cock or spigot near the bottom, and should be placed at such a height from the ground that a smaller vessel may stand beneath it, to receive the liquor when drawn off. The three vessels are thus placed near each other, in a place where the temperature is about 52° Fahr.; and where good clear water may conveniently be pumped into the upper vessels.

The dried slices of beet-root, after being sifted from dust and loose fibres, are put into one of the upper tubs. Clear cold water is then poured on the roots, to about one-third in height above them. After the beet has been thus steeping for three hours, being stirred at intervals with a wooden paddle, the second tub is supplied with about as much beet as had been put into the first; and the sweet liquor from the first tub, is drawn into the vessel underneath, and poured upon this second. Sufficient clear water is then put into the first tub to cover the beet; and the beet in both tubs is stirred occasionally for another period of three hours. The liquor in the second tub, which, if the beet were of the proper kind, would now be very sweet and of an agreeable red colour, is drawn off, and filtered through a sieve or flannel, into the vessel beneath.

After this, the second supply of liquor is drawn from the first tub, and poured into the second; more fresh water is poured on the first tub; and both are left to steep for three hours, as before. Then the third tub is brought into requisition in the same way as the other two, by putting into it an equal quantity of dry beet, to which is added the liquor from the second tub. After which, the liquor from the first tub is removed to the second; and the beet in the first tub, being now deprived of saccharine matter, may be used for feeding hogs or cattle.

When another period of three hours has elapsed, the liquor is drawn from the third tub, by filtering as before; and the liquid from the second vessel is poured into the third. Another supply of fresh water is poured into the second vessel, and is allowed to remain three hours, being stirred occasionally. During this time the first tub is cleansed, and a new supply of beet is put into it. This goes through the same routine of processes as before; and thus the operations continue until the saccharine matter has been obtained from all the beet. It will be seen that this apparently circuitous employment of the three tubs, and the interchange from one to another, is for the purpose of obtaining all the saccharine matter from the beet, without loss; but it will not be necessary to trace the steps further. The spent roots having been given as food to cattle, and the juice being ready for boiling into sugar, the operations proceed as follow.

The extracted saccharine liquor is boiled down to the consistence of syrup; then put into a copper, and boiled over a moderate fire until that degree of thickness is obtained that a phial which holds one ounce of water will contain eleven drachms of the syrup. As the scum or froth rises, it must be carefully taken off. When the syrup is brought to the desired consistence the fire must be removed from the copper, and the syrup gradually poured through a thin woollen cloth, placed over a wooden or stone vessel. The syrup must not cool too much before thus filtered, otherwise it becomes "ropy."

When the filtered syrup is somewhat cool, it is laded into shallow wooden or stone vessels to crystallise; vessels made of tin, and also shallow earthen vessels, such as are used to produce cream, may however be adopted for this purpose. The vessels, filled with syrup, are placed in a room heated to about 70°; and care is taken to keep the syrup clear from flies and dust. If the syrup has been of a proper consistence, crystals will soon begin to form at the bottom of the vessels; and in the space of eighteen or twenty days, the crystallization will be completed. The mass must then be put into a strong linen sack, well secured, and placed under a press to squeeze out the liquid from the sugar which remains in the bag; a cheese-press or long lever will serve for the purpose of pressure. The liquid matter may be set to crystallize a second, and even a third time, and will yield sugar of a coarser quality.

The sugar first obtained may be rendered purer by well mixing therewith a small quantity of clear spring-water, and placing it again under the press; the coloured syrup will then run out, and leave the sugar in the bag

in a much purer state than before. By repeating the operation the sugar becomes so far improved, that it assumes, when dried and rubbed, the state of a fine white powder. The separated syrups being again carefully boiled, more sugar will be obtained from them by crystallization.

If the sugar produced by the first pressure be dissolved in as much clear water as will form a syrup, and placed again in a warm room to crystallize, it will yield a much purer and harder sugar. The syrup may then be separated without pressure from the sugar, merely by inclining the vessel, and allowing the syrup to run off from the crystals. The remaining thick syrups may be used as treacle or molasses, and will serve the purposes of the distiller.

Such is the process which Professor Gottling suggested for the preparation of beet-root sugar, and which was first made known in England by Mr John Taylor. We may here follow up these details by a notice of the constituent elements of beet-root, as determined by Professor Lampadius, of Freyberg.

Beet-root contains or consists of water, fibrous matter, sugar, mucilage, albumen, starch, and three substances which, for want of better names, are termed the colouring, the odoriferous, and the bitter principles. The following very interesting train of experiments was made by Professor Lampadius, with a view of determining what substances he could obtain from one-hundred and ten pounds of the white beet-root, the *Beta cicla* of Linnæus. The beet, when washed, peeled, cleaned, and grated, gave a mass weighing eighty-seven pounds; out of which were pressed forty-one pounds and a half of juice. This juice was boiled with twenty ounces and a half of charcoal powder; by which it was made to yield, when filtered and evaporated down until crystallized, five pounds of a brownish-yellow grained sugar, and five ounces of brown syrup. This brown sugar, after being dissolved in six pounds of lime water, mixed with one pound of blood, was boiled, filtered, and evaporated; from which resulted four pounds five ounces and a half of purified brown sugar, and six ounces and a half of syrup. The purified sugar thus produced, was then dissolved in six pounds of lime water, mixed with one pound of milk, and boiled for a quarter of an hour; during the boiling a small quantity of white wine vinegar and a little more milk were added; the saccharine matter was filtered and treated as before; and the product was four pounds of well-grained white powder sugar. The residuum after pressure, the brown syrups of the first two processes, and the remains of the filtrations, weighed, when collected, forty pounds. They were then mixed with one quart of yeast and eighty quarts of water, heated to 112° Fahr.; and, after fermenting forty-eight hours, were distilled. They furnished, at the first distillation, fifteen quarts of weak spirit, which, on a second distillation, gave eight quarts of a better spirit; from which, when rectified, were produced three quarts and a half of spirits resembling rum.

We must beg the reader to bear in mind, that the foregoing details give a view of what had been done by Margrat, Achard, and Gottling, at various periods preceding the commencement of the present century. In the next paper on this subject, we shall detail the circumstances under which, and the mode in which, the French government took advantage of these experiments, in encouraging the cultivation of the beet-root in that country.

THE study of nature requires two qualifications of the mind, which at first sight appear to be opposed to each other:—the comprehensive view of a bold genius that embraces the whole, and the minute and careful inspection of an unwearied industry that lives upon the smallest objects. —BUFFON.

BIRTHDAY LINES.

THOU wakest from rosy sleep to play,
With bounding heart, my boy!
Before thee lies a long bright day
Of summer and of joy.

Yet, ere the cares of life lie dim
On thy young spirit's wings,
Now, in thy morn, forget not Him
From whom each pure thought springs.

And then, my child, in future years,
Wherever thy path may be,
When strength is gone, or grief appears,
He will remember thee!—Mrs. HEMANS.

IT would be easy to produce from the writings of Infidels many testimonies to the excellence of Christianity. Bolingbroke affirms, that if Christianity has been a human invention, it is the most amiable invention that ever was imposed on mankind for their good; that it contains a most simple and intelligible rule of belief, worship, and manners; and that the Gospel is one continued lesson of the strictest morality, of justice, of benevolence, and of universal charity.

IT is no unusual thing for men of the most abandoned character to be struck with profound awe, and restrained from their vile purposes, by the presence of an eminently pious person. There is a power in real godliness, which commands the reverence of those who hate it; and this the proudest sinners often so far feel, as to be unable to carry on their violent opposition against it, while yet no saving change is effected upon them.—ROBINSON.

THE human body considered simply as an engine to be worked by a superior agent—as a system of combined and organized matter, to be actuated and controlled by a living spirit, is a most wonderful instance of creative power and plastic skill. It may be considered as a world in miniature, as an epitome of all the sciences, as an abridgment of the great book of nature. To whatever part of it we direct our attention, we discover a most remarkable exemplification of the general laws of physics. In its optics, as expressive of the functions of the eye, we have mathematics of the highest order. In the formation of the bones, and in the arrangement of its various joints and ligaments, we have the principles of mechanics most strikingly exhibited to our view. In the circulation of its fluids, the heart, the arteries, and the veins, may be regarded as an hydraulic apparatus. The process of respiration is an example of pneumatic action. In the gradual formation of its general substance—in the precipitation of the various elements which constitute its specific parts, we have chemistry in some of its finest and most beautiful combinations. Over and above all these subordinate agencies, however, there is a master principle—there is life, the grand chemist, the mighty engineer, who superintends and regulates the whole. And although he is invisible to the keenest eye, and baffles the strongest microscope, the effects which he works are too palpable to admit a rational doubt of his separate and distinct existence, and the very obscurity of his retreat tends only to raise our admiration of the power and wisdom of that Being, by whom he was originally created, and by whose will he has been attached to our frame. Truly then may we say in the view of this mysterious union of body and soul—of matter and spirit in the present condition of our nature, that we are "fearfully and wonderfully made." This is therefore doubtless the just and legitimate method of studying the science of physiology—to regard it as exhibiting throughout a most remarkable illustration of the "manifold wisdom of God." So forcibly was the celebrated heathen philosopher and physician, Galen, struck with this fact, that he remarked, that if there was no other proof of it, the examination of the human eye alone would be sufficient to demonstrate the existence of a Supreme Being.—DAVIES'S *Handmaid.*

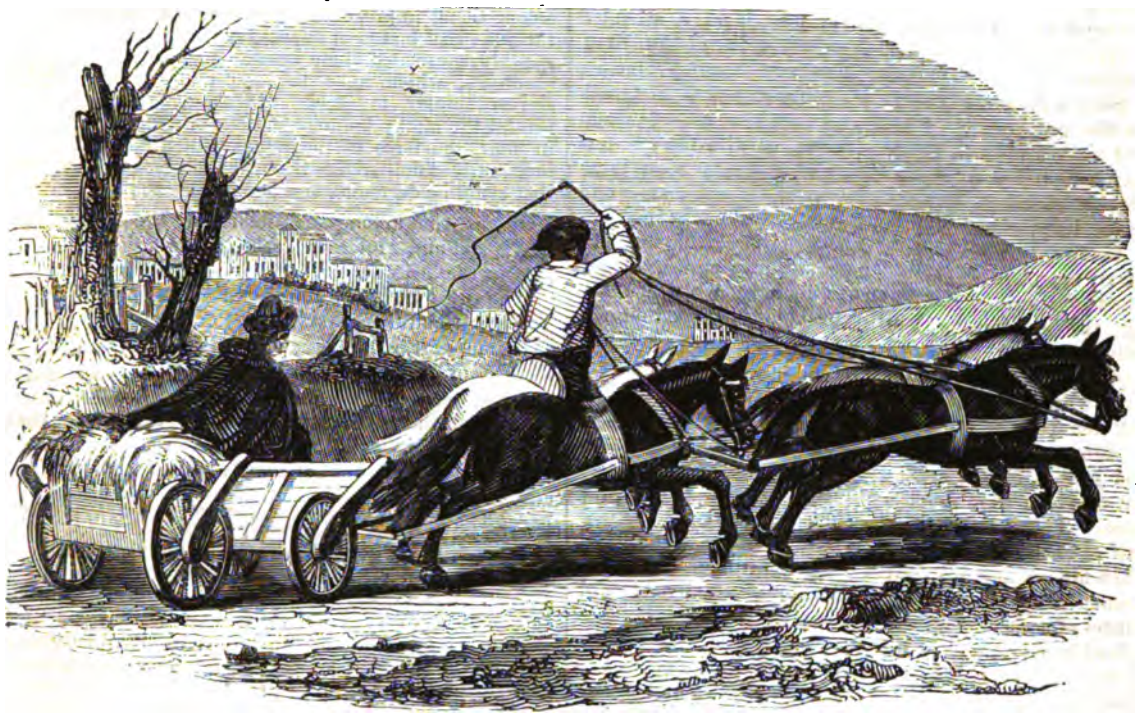
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 582. JULY 31ST, 1841. {PRICE ONE PENNY.

TURKEY AND THE TURKISH PROVINCES.



TRAVELLING POST IN WALLACHIA AND MOLDAVIA.

WALLACHIA AND THE WALLACHIANS.

In our recent article on Moldavia, we stated that this province was bounded on the south by Wallachia. The two together seem indeed to have formed the ancient province of Dacia, in the time of the Romans; but to have been separated at a subsequent period in their history.

Wallachia is bounded on the north by Moldavia, and the Austrian province of Transylvania; on the west by Baunat and Servia; and on the south and east by the Danube, which separates it from Bulgaria. The proximity of the Black Sea on one side, and of the Carpathian mountains on the other, give a variable character to the climate; but this variability is not so gradual as in England: the summer comes in very suddenly and fiercely, but is of short duration; while the winter is both long and severe. The Danube is generally frozen over for six weeks; the ice being of such a thickness as to form a road for the heaviest artillery with perfect safety. Generally speaking, Wallachia may be deemed a cold country; and this, together with a damp quality in the soil, and the existence of many marshy places, produces a marked effect on the animal and vegetable productions of the district. The vegetables are said to be of inferior flavour; the flowers deficient in perfume; the domestic animals remarkable for mildness; the bears, wolves, foxes, and other wild animals, much more timid than in other countries; and lastly, man himself, dull and heavy, with weak passions, no strength of mind, and an utter aversion to a life of industry. Such are said, on the authority of one who dwelt long in the country, to be the characteristics of Wallachia and Moldavia, so far as the influence of climate is concerned.

In our former paper we took occasion to describe the humbler classes of inhabitants; their avocations and their weaknesses. We will here glance at the more wealthy inhabitants; for Wallachia and Moldavia bear a close resemblance in these respects.

We have said that these provinces are governed by voyvodes, more frequently termed *Hospodars;* and that by recent treaties between Turkey and Russia, these Hospodars have become more than ever independent of the former, and elective on the part of the inhabitants. Throughout the whole of the last century, although the choice of these governors was nominally in the hands of the people, yet the Sultan in fact appointed them with as little deference to the will of the people as in any other of the Turkish provinces. This being the case, it was matter of state policy not to appoint a native Wallachian or Moldavian to this post, lest feelings of patriotism might induce him to rebel against the extortionate demands of the Sultan. On the other hand, there were reasons why it was deemed imprudent to appoint native Turks to this office, since, being Mohammedans, they were wholly estranged from the people of those provinces. The plan acted on, therefore, was to appoint Greeks, residing at or connected with Constantinople, to the office of Hospodar; because, although their religion corresponded with that of the Wallachians and Moldavians, yet they fawned upon the Ottoman court, and looked in that quarter for support and promotion. We mention this circumstance as an explanation of the fact, that a number of wealthy Greek families are found in these provinces, connected more or less with the Hospodars.

When the choice of the Hospodar was thus virtually

in the hands of the Sultan, the Greek chosen to fill the office received his investiture at Constantinople with great pomp. The military crest was put on his head by the Muzhur Aga, and the robe of honour by the Vizier himself. He was honoured with military music, and made his oath of allegiance in the presence of the Sultan. From the palace he went in solemn procession to the patriarchal Greek church, where prayers and ceremonies were performed similar to those which were formerly observed at the inauguration of the Greek Emperors. He was then accompanied to his principality by Turkish officers, and made a public entry into the capital of the province with a great display of magnificence, attended by the nobles and the higher orders of the clergy.

When Captain Frankland travelled through Wallachia in 1827, he found that the Hospodar was a Greek named Nicholas Ghika, whom he visited, and of whom he says:—"His Highness received us with the greatest affability, rising from his sofa, and standing upon it as he received us. He then gave us pipes and coffee, and we conversed with him in Italian and French: he is a middle-aged, good-looking man. His revenue is about three hundred thousand pounds sterling; and he is said to have amassed an immense fortune, which he has lodged at Vienna." Captain Frankland found that the Hospodar was at that time embroiled with some of the nobles on account of certain public monies which he was suspected to have appropriated to his own private use. Dr. McMichael well characterised the Hospodars, at the period of the recent changes, as exhibiting the extraordinary phenomenon of a nearly pure despotism exercised by a Greek Prince, who was himself at the same time an abject slave to the Ottoman Porte.

The Boyars, or native nobles of Wallachia and Moldavia, are but a rude class, compared with a parallel class in Western Europe. Their education is usually confined to the mere knowledge of reading and writing the language of the country, and the modern Greek. Some few add to this superficial stock of learning, a few of the rudiments of the French language; and a few others converse in it without understanding anything of its grammar or principles. A slight acquaintance with two or three ancient authors, or the power of composing a few verses, is sufficient to obtain for them the titles of literati and poets, and the admiration of their acquaintances. In short, the inducements to mental culture are so few, that early discipline and instruction are scarcely thought of. They cannot be taxed so much with any actual propensity to vice, as with the absence of any ennobling characteristics: ignorance and established prejudices are their worst enemies. They are greedy in the acquisition of wealth, and heedless in its expenditure: averse to the trouble of superintending their private affairs, they entrust them to the hands of stewards, who too often enrich themselves at their employers' expense. A lax state of morality is thus engendered, which sheds its pernicious influence through the humbler classes.

Those Boyars who have no public employment, spend their time in a very idle manner, resorting to the capitals Bukharest and Jassy, for the sake of society, and leaving the management of their country estates in very inadequate hands. They attend clubs and masked balls at the capitals; but seldom appear to engage in anything which can advance or aid their country, except when some political ferment arises.

When we state that two hundred and ten days of the year are regarded by the Wallachians and Moldavians as holidays or fasts, during which no work must be done, the reader will easily conceive, not only how stagnant must be the state of manufacturing and commercial industry throughout the country, but also how large a scope is opened for temptation and immorality of all kinds; the Boyars are "killing time" in their pursuit of pleasure; and the poor visit brandy-booths or cellars, where the mind and body suffer equally.

The Greek population of these provinces bears a considerable resemblance to that of the higher classes of society in the Morea, in dress, religion, and manners. The causes which led to their appointment in the government of the provinces we have already detailed, and the line of conduct which they pursued there was such as naturally resulted from subservience to the Sultan, and the absence of any patriotic feeling for the country which they governed. It has been well observed of the moral condition of the Greeks in the last century:—

> Humiliated, degraded, and oppressed as the Greeks were since they had ceased to be a nation, civilization degenerated among them, in proportion to the weight and barbarism of the yoke that had been imposed on them; and they had insensibly contracted those habits of corruption and servile obedience, which must be inseparable from a state of slavery similar to theirs. Dissimulation and falsehood became the most prominent features of their character; and, in short, the force of the causes which acted upon them incessantly familiarized them, by degrees, to everything that could be degrading and humiliating to man.

It was from among such men that the Hospodars of Wallachia and Moldavia were chosen during the greater part of the last century.

The great bulk of the people are employed more or less in agricultural pursuits, the poorer classes cultivating the lands of the richer, and receiving payment in kind instead of money. Mr. Wilkinson, in describing the mode of husbandry in these provinces, says that the manner of tilling does not materially differ from that of other countries in Europe, except that oxen are always employed instead of horses. Wheat is sown during the autumn; and barley and Indian corn in spring. The harvest of the first two generally takes place in the month of July, that of the latter at the beginning of September; and as Indian corn is required for the nourishment of a great portion of the population, the quantity of it sown and reaped every year is equal to that of wheat. Barley, being used only as food for cattle and poultry, is sown in much smaller proportion. The vine is cultivated to a limited extent, and is planted in such places as are most sheltered from the weather: the grape is seldom gathered before the end of September, and as it does not come to a perfect state of maturity, it makes but indifferent wine of a light quality and sourish taste. The same writer observes:—

> The great waste of land left in both provinces in a state of nature, and the universal custom of not cultivating the immediate vicinity of the high roads, give to the country, in many parts, an appearance of desolation; and a traveller, who only judges by the scenery within his view, is apt sometimes to think himself in a wilderness; he meets with few habitations on his way, except those attached to the post-houses, and hardly perceives any other population.

It need perhaps scarcely be said, after a due consideration of the character of the inhabitants, that good roads, and good modes of conveyance from town to town, are not to be looked for. Our cut represents a vehicle which we may term the "post-chaise" of the inland parts of these provinces. These vehicles are made entirely of wood, without a single particle of iron about them; consequently, they are very light, readily upset, and as easily righted: they are about three feet high, and four feet long, and capable only of holding a portmanteau, upon which a small quantity of hay being placed, the traveller sits. The rudeness of their construction makes them easy of repair; they are changeable at every post-house, and four horses are harnessed to each. These vehicles are driven by postilions, who generally wear a rough goatskin cap.

In our sketches illustrative of Turkey and the Turkish Provinces, we aim at taking as varied a course as our narrow limits will permit; dwelling sometimes chiefly on the antiquities, at others on the historical associations, at others on the topographical beauties of the district selected. In these two papers on Moldavia and Wallachia,

we have directed our attention mainly to the character and condition of the inhabitants, rather than to the number and ranks of their towns, &c., since the peculiar condition of these districts with respect both to Russia and to Turkey, makes the state of the population a matter of much interest.

A SCENE IN THE BICÊTRE.

THE Bicêtre is the Bedlam of Paris, and Pinel, the chief actor in the following triumph of huumanity, was an accomplished physician of the time. We have before alluded to the incident at page 60, Vol. XVI., *Saturday Magazine*, but the wisdom, courage, and humanity which the act displays, render it worthy of a more extended notice.

Towards the end of the year 1792, Pinel, after having many times urged the French Government to allow him to unchain the maniacs of the Bicêtre, but in vain, went himself to the authorities, and with much earnestness and warmth advocated the removal of this monstrous abuse. M. Couthon, a member of the Commune, gave way to M. Pinel's arguments, and agreed to meet him at the Bicêtre. Couthon there interrogated those who were chained, but the abuse he received, and the confused sounds of cries, vociferations, and clanking of chains in the filthy and damp cells, made him recoil from Pinel's proposition. "You may do what you will with them," said he, "but I fear you will become their victim." Pinel instantly commenced his undertaking. There were about fifty whom he considered might be unchained without danger to the others, and he began by releasing twelve, with the sole precaution of having previously prepared the same number of strong waistcoats, with long sleeves, which could be tied behind the back, if necessary.

The first man on whom the experiment was to be tried was an English Captain, whose history no one knew, as he had been in chains for forty years. He was thought to be one of the most furious among them; his keepers approached him with caution, as he had in a fit of fury killed one of them on the spot with a blow from his manacles. He was chained more rigorously than any of the others. Pinel entered his cell unattended, and calmly said to him, "Captain, I will order your chains to be taken off, and give you liberty to walk in the court, if you will promise me to behave well and injure no one." "Yes, I promise you," said the maniac, "but you are laughing at me, you are all too much afraid of me." "I have six men," answered Pinel, "ready to enforce my commands, if necessary. Believe me then, on my word, I will give you your liberty if you will put on this waistcoat."

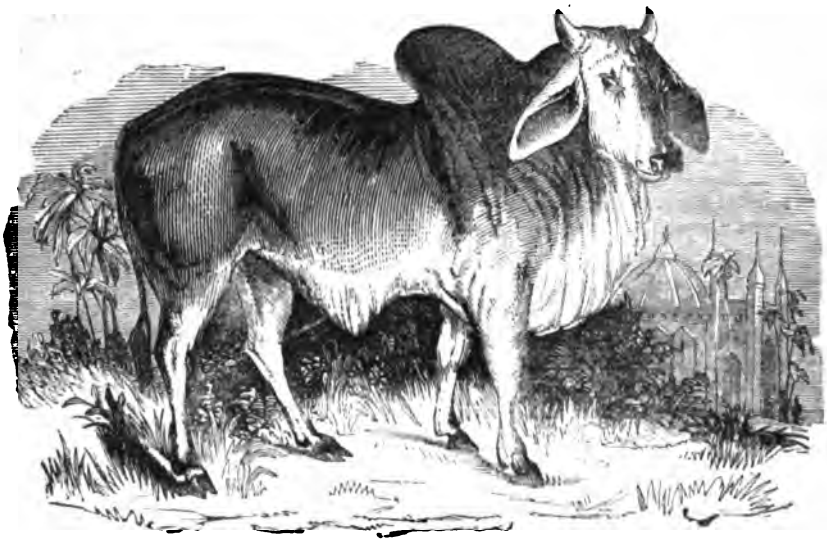
He submitted to this willingly, without a word; his chains were removed, and the keepers retired, leaving the door of his cell open. He raised himself many times from his seat, but fell again on it, for he had been in a sitting posture so long that he had lost the use of his legs; in a quarter of an hour he succeeded in maintaining his balance, and with tottering steps came to the door of his dark cell. His first look was at the sky, and he cried out enthusiastically, "How beautiful!" During the rest of the day he was constantly in motion, walking up and down the staircases, and uttering short exclamations of delight. In the evening he returned of his own accord into his cell, where a better bed than he had been accustomed to had been prepared for him, and he slept tranquilly. During the two succeeding years which he spent in the Bicêtre, he had no return of his previous paroxysms, but even rendered himself useful by exercising a kind of authority over the insane patients, whom he ruled in his own fashion.

The next unfortunate being whom Pinel visited was a soldier of the French guards, whose great fault was drunkenness: when once he lost self-command by drink, he became quarrelsome and violent, and the more dangerous from his great bodily strength. From his frequent excesses, he had been discharged from his corps, and had speedily dissipated his scanty means. Disgrace and misery so depressed him that he became insane; in his paroxysms he believed himself a general, and fought those who would not acknowledge his rank. After a furious struggle of this sort, he was brought to the Bicêtre in a state of the greatest excitement. He had now been chained for ten years, and with greater care than the others, from his having frequently broken his chains with his hands only. Once when he broke loose, he defied all his keepers to enter his cell until they had each passed under his legs; and he compelled eight men to obey this strange command. Pinel, in his previous visits to him, regarded him as a man of original good nature, but under excitement, incessantly kept up by cruel treatment; and he had promised speedily to ameliorate his condition, which promise alone had made him more calm. Now he announced to him that he should be chained no longer; and to prove that he had confidence in him, and believed him to be a man capable of better things, he called upon him to assist him in releasing others who had not reason like himself, and promised, if he conducted himself well, to take him into his own service. The change was sudden and complete. No sooner was he liberated, than he became obliging and attentive, following with his eye every motion of Pinel, and executing his orders with as much address as promptness; he spoke kindly and reasonably to the other patients; and during the rest of his life was entirely devoted to his deliverer. And "I can never hear without emotion," (says M. Pinel's son, the author of this memoir,) "the name of this man, who some years after this occurrence shared with me the games of childhood, and to whom I shall always feel attached."

In the next cell were three Prussian soldiers, who had been in chains for many years, but on what account no one knew. They were in general calm and inoffensive, becoming animated only when conversing together in their own language, which was unintelligible to those about them. They were allowed the only consolation of which they appeared sensible,—to live together. The preparations taken to release them alarmed them, as they imagined that the keepers were come to inflict new severities, and they opposed them violently when removing their irons. When released, they were unwilling to leave their prisons, and remained in their habitual posture. Either grief or loss of intellect had rendered them indifferent to liberty.

In the course of a few days, Pinel released fifty-three maniacs from their chains; among them were men of all conditions and countries,—workmen, merchants, soldiers, lawyers, &c. The result was beyond his hopes. Tranquillity and harmony succeeded to tumult and disorder, and the whole discipline was marked with a regularity and kindness which had the most favourable effect on the insane themselves, rendering even the most furious more tractable. Humane physicians in every part of the civilized world, sooner or later, responded to the feelings which dictated this memorable act, the remote consequences of which brought sympathy to a thousand cells of suffering and neglect.

NEVER were the splendour and magnificence of courts, and numerous trains, and noble retinue, set in a truer light, than when the King of kings contented himself with the ministry of his meek mother, and chose to receive the first respects of a few humble shepherds. Never was the true use of power more nicely taught, nor its haughty arrogance and insolent abuses more effectually reproached, than by this proof, that God was then strongest, when he put on the greatest appearance of weakness. The princes, and great ones of this world, are then most truly great, most like their glorious Original above, when they think no condescension below them for a general good.—DEAN STANHOPE.



THE ZEBU.

THE domesticated Asiatic Ox, or Zebu, from the perfect agreement of its internal structure with that of the common ox, is generally believed to be merely a variety of that animal. It is difficult to account for the production of those distinctive characters which now mark the two races, and separate them from each other; but whatever may have been the cause of the differences between the common and the Indian ox, these differences rapidly disappear by the intermixture of the breeds, and, at the end of a few generations, are entirely lost.

Not only does the anatomical structure of the zebu exactly correspond with that of the ox, but the more essential particulars of external conformation are the same in both animals. The form of the head presents no difference whatever. In both, the forehead is flat, or slightly depressed, of a height nearly equal to its breadth, thus giving a square outline. An angular protuberance passes directly across the skull, between the bases of the horns. The size and direction of the horns vary much. In some they are short and sub-erect, in others they are comparatively long and point backwards. The ears of some are of the ordinary size, but in others they are long and pendulous. The dewlap is, in many cases, very largely developed.

These animals are chiefly distinguished by the large fatty hump on the shoulders. Numerous breeds of this humped variety are scattered, more or less extensively, throughout Southern Asia, the Islands of the Indian Archipelago, and the Eastern Coast of Africa, from Abyssinia to the Cape of Good Hope. They differ in size from that of a large mastiff-dog, to that of a full-grown buffalo. The colour of this animal varies in different climates. Its ordinary hue is a light ashy grey, passing into a cream-colour or milk-white, but it is not unfrequently marked with various shades of red or brown, and it has been known to become perfectly black. The hump is sometimes elevated in a remarkable manner, and retains an upright position; but it often becomes half pendulous, hanging partly over towards one side. Those furnished with a second hump are of a distinct breed, said to be very common in Surat. Among the other breeds there are some altogether without horns, and others having only the semblance of them, the external covering being destitute of the support of bony processes, and consequently flexible and pendulous.

The Indian ox is employed throughout the various countries we have named for nearly the same purposes as the European one. It is a beast of burthen, and an article of food and domestic economy. In some parts of India it executes the duties of a horse, and is used both to the saddle and harness. It is said to perform journeys of twenty and thirty miles a day, though the old writers speak of fifty or sixty miles a day as its usual rate of travelling. The beef afforded by this animal is far from equalling that of the European ox: the hump, which is chiefly composed of fat, is reckoned the most delicate part.

The whole of the different breeds of zebus are held in great veneration among the Hindus. They do not in general object to work them, but to deprive them of life under any pretext whatever, is accounted a sin; and to partake with those who eat of their flesh is considered the height of impiety. A select number of these animals are, however, exempted from all services, and deemed especially sacred. They have the privilege of straying about the towns and villages, and taking their food whence they please. They are not allowed to want for anything, and the most delicate food is cheerfully prepared for them by the devotees, who impose on themselves this charitable office. Respecting the superstitious respect paid to these sacred animals we have the following remark from the *Oriental Annual*.

On the banks of the river (Cavery), in the neighbourhood of a small pagoda, we saw a couple of Braminee bulls, so sleek and fat as to form a perfect contrast with the population around them, everything suffering from the sad scarcity of grain, while the bones of these sacred animals were loaded with an encumbrance of consecrated flesh. It was melancholy to see that while thousands of human beings were starving, the bulls dedicated to the stern divinity, Siva, were so pampered that they would eat nothing but the most delicate food, and this was generally taken with a fastidious and pallid appetite. These bulls were very small but very beautiful; the dewlap of one of them hanging from his throat and between his fore-legs, almost touched the ground. I could not help feeling deeply the sad fact, that the miseries of their fellow-creatures were looked upon with cruel indifference by the wealthy members of the Hindoo community; while before the dumb creatures devoted to their gods, and those senseless blocks which form the disgusting effigies of their divinities, that food was scattered which would have saved whole families from perishing with hunger.

In Benares, and other cities which are crowded with the more wealthy Hindoos of high caste, these animals are exceedingly numerous, thronging the streets, and the courts, and areas of temples. They are very fat, indolent, and inoffensive.

Benares is accounted the holiest of the Hindoo cities, and occupies a somewhat similar position to that which Rome once held among the cities of Christendom. Bishop Heber tells us that the more conspicuous parts

of the houses in this city are adorned with gaudy paintings of flower-pots, men, women, bulls, elephants, gods, and goddesses, in all their many-formed, many-headed, many-handed, and many-weaponed varieties.

The sacred bulls devoted to Siva (says this author), of every age, tame and familiar as mastiffs, walk lazily up and down these narrow streets, or are seen lying across them, and hardly to be kicked up (any blows indeed given them must be of the gentlest kind, or woe be to the profane wretch who braves the prejudices of this frantic population) to make way for the Tonjon.

At the famous Hindoo festival called *Ponjol*, celebrated on the last three days of the year, the concluding ceremony is the worship of the cow, the emblem of *Bhavani*. The animals are first sprinkled with holy water; then the devotees make four prostrations before them; their horns are then painted with various colours; garlands of flowers and strings of cocoa-nuts and other fruit are put round their necks, which being shaken off as they walk or run about, are eagerly picked up, and preserved as sacred relics by the crowd. The consecrated animals are then driven in a body through the villages and followed by crowds of people, who make a discordant noise upon various musical instruments During the remainder of the day the cows stray whithersoever they please, and feed in every field without restraint.

Who hastens to be rich, resembles him
Who is resolved that he will quickly swim,
And trusts to full-blown bladders! He, indeed,
With these supported, moves along with speed;
He laughs at those whom untried depths alarm,
By caution led, and moved by strength of arm;
Till in midway, the way his folly chose,
His full-blown bladder bursts, and down he goes!
Or, if preserved, 'tis by their friendly aid,
Whom he despised, as cautious and afraid.—Crabbe.

The propriety of cultivating feelings of benevolence towards our fellow creatures, is seldom denied in theory, however frequently the duty may be omitted in practice. It has been recommended by the eloquence of heathen philosophers, and enforced by some extraordinary examples of heathen philanthropy, but as the foundations on which they built their beautiful theories of virtue were narrow and confined, the superstructure was frail and perishable, and never was the true foundation discovered, till brought to light by Jesus Christ. He first taught how the obstacles to benevolence were to be removed by conquering that pride, self-love, and vain-glory, which had till then constituted a part of the catalogue of human virtues. He first taught the universality of its extent by connecting it with the love of the common Father and Benefactor of all; and made the love of our fellow-creatures the test and criterion of our love to our Creator, while from true devotion to the Supreme Being, he taught that benevolence to man must necessarily flow. He likewise taught that upon all who were convinced of these truths, and were anxious to fulfil the Divine commandments, Divine assistance would be bestowed. He alone ennobled virtue, by the assurance of an eternal reward, and gave dignity to this probatory scene, by representing it as introductory to a glorious and ever-during state of felicity. —Elizabeth Hamilton.

How manifold are thy deep wonders, Lord!
Night after night into thy heavens I gaze,
And watch, as circling through the starry maze,
The golden planets move in sweet accord.
O blasphemy of fools, O thought abhorred!
That would th' eternal characters erase,
Which to the creature show in living blaze
Creative Wisdom, and a God record:
Yea—characters, that they who run may read,
Writ every where, throughout each land and sea,
In telling of His power are all agreed.
Yet nought on Earth beneath, in Heaven above,
Declares like Jesus, sinner! given for thee,
A God of holiness, a God of love.—Rev. C. Strong.

ON SWIMMING.

Self-Preservation from Drowning.

It is much to be regretted, that with the abundant supply of water assured to this metropolis, more use of it is not made for the purposes of personal health and comfort. Perhaps no capital in Europe is so poorly supplied with baths, and certainly in none is bathing so little practised. This is much to be lamented, for there can be no doubt that frequent bathing is highly conducive to health, and would tend to prevent or mitigate many of the evils usually found in overcrowded cities. From this little familiarity with immersion in water, it doubtless happens that so few persons are acquainted with the art of swimming, and with the mode in which they should conduct themselves when risk of drowning presents itself. The English above all other people should be good swimmers, exposed as they are by their insular situation and commercial pursuits, and disposition to visit other lands, so frequently to perils by sea: yet, while several towns on the Continent have their swimming schools, none such exist in London.

It is to be regretted that Dr. Franklin did not put into force his intention of establishing one. However, were public baths more numerous, this would be the less to be regretted, as, when frequent opportunities of practice are afforded, self-instruction is by no means difficult. The Romans expressed their opinion of a man's great stupidity by saying "he can neither read nor swim."

Most animals have a natural aptitude for swimming, not found in man, for they will at once swim, when even first thrown into the water; but it must be observed that the motions they then employ, much more resemble their ordinary movements of progression, than those made use of by man under similar circumstances.

The children of several uncivilized nations, especially when warmth of climate exists, frequent the water from an early age, and seem almost to swim by instinct: the remarkable powers of endurance, agility, and strength manifested while in the water by many individuals of savage tribes are well known; powers which often enable them to come off victorious in struggles with some of the fiercest inhabitants of their rivers and coasts.

The art of swimming is by no means of difficult attainment, and several authors (especially Dr. Franklin) have supplied directions to facilitate its acquisition. Above all things self-confidence (not rashness leading into danger) is required, and when this is possessed all difficulty soon ceases, especially if the learner be assisted at first by some friend who is a swimmer. Dr. Franklin (himself an expert swimmer) recommends that at first a familiarity with the *buoyant* power of water be gained, and to do this he desires the learner, after advancing into the water breast-high, to turn round so as to bring his face to the shore: he is then to let an egg fall in the water, which being white will be seen at the bottom. His object now must be by diving down, with his eyes open, to reach and bring up this egg: he will easily perceive that he is in no danger in this experiment, as the water gets shallower of course towards the shore, and, because, whenever he likes, by depressing his feet, he can raise his head again above water.

The thing which will most strike beginners will be the great difficulty they experience in forcing themselves through the water to reach the egg, in consequence of the great resistance the water itself offers to their progress; and this is, indeed, the practical lesson derivable from the experiments; for the learner becomes assured of the very great *supporting or sustaining power* afforded by water, and hence derives a confidence essential to rapid progress. This sustaining power of water is shown under many circumstances; thus, a stone, which on land requires two men to remove it, might *in water* be easily carried by one.

A man may walk with impunity upon broken glass in

deep water, because his weight is supported by the water. But many men have been drowned in attempting to wade across the fords of rivers, from not being aware that the body is supported by the water, and does not press on the bottom sufficiently to give a sure footing against a very trifling current. A man, therefore, carrying a weight on his head or shoulders, may safely pass a river, where, without a load, he would be carried down the stream*.

In fact, the knowledge of this "fluid support," constitutes the ground-work of all efforts at self-preservation from death by drowning.

That a person exposed to danger by water should swim well is important, as adding to his security, but it is still more important that he should know that he can be supported in the water, even without swimming, (provided he retains his presence of mind,) by a very trifling effort; for, while the best swimmer, by his exertions, would in no very long time become exhausted, by means of merely *floating* on the water much fatigue would be spared him, and his chance of being saved much increased. In fact to do this is exceedingly easy, for the human body is, when the chest is filled with air, as by an ordinary inspiration, of a less specific gravity (that is, weight in proportion to bulk) than the water which supports it, and, therefore, must float; and it does so naturally, having about half the head above the water; so that the person exposed to danger has only to turn upon his back, in order that that half consist of the face, and free respiration be thus secured. But, to float thus upon the water, the greatest care must be taken not to elevate the arms or other parts above its surface, and it is in remembering this caution, that presence of mind at the time of danger confers so much benefit, for, in the moment of terror, a person thrown into the water almost instinctively stretches out his hands aloft to grasp at some object, thereby depriving himself of a means of proceeding which would frequently keep him afloat until succour arrived. By elevating any part of the body in this way, we remove it from the support afforded by the water, and thus render sinking inevitable.

Mr. Nicholson in his journal relates an instructive instance of the importance of this caution. While the ship Worcester was sailing along the Ganges, at the rate of seven or eight knots per hour, a man, who was unable to swim, fell into the water. When first perceived, his head was above water; he held up his hands, and after a few seconds splashing he sank: soon after he rose again, and the officer of the ship, who had a trumpet in his hand, called out to him, "Keep your hands down in the water." He obeyed, and remained a considerable time afloat, while a boat was manned for his assistance; by a blunder of the sailors in their haste the boat was considerably delayed, and the ship was rapidly distancing him; alarmed at this, he forgot his instructions, again raised his hands, dashed them in the water, and soon sank: he however speedily rose again, and obeying the same instructions, incessantly repeated to him by the captain, by means of his trumpet, again floated. Whenever he deviated from this rule he sank, and this he did at least five times before the boat reached him, when he had been almost carried out of hearing; when taken up he was so little hurt as to be able to assist in rowing back to the ship. Mr. Nicholson concludes with the following simple rule: "When a man falls into deep water, he will rise to the surface by floatage, and will continue there if he do not elevate his hands. If he move his hands *under* the *water* in any manner he pleases, his head will rise so high as to allow him free liberty to breathe. And if he move his legs, as in the action of walking (or rather walking up stairs), his shoulders will rise above the water; so that he may then use less exertion with his hands, or apply them to other purposes."

Dr Arnott, in allusion to this subject, observes that so many persons are drowned who might be saved, for the following reasons: 1. Their believing that continued exertion is necessary to preserve the body from sinking, and their hence assuming the position of a swimmer with the face downward, in which the whole head must be kept out of the water in order to enable them to breathe, whereas, when laying on the back, only the face need be above the water. 2. From the groundless fear that water entering by the ears may drown as if it entered by the mouth or nose, and their employing exertions to prevent this. 3. The keeping the hands above the surface already alluded to. 4. Neglecting to take the opportunity of the intervals of the waves passing over the head to renew the air in their chests by an inspiration. 5. Their not knowing the importance of keeping the chest as full of air as possible, which has nearly the same effect as tying a bladder full of air around the neck would have.

We have dwelt thus long upon the power of water (especially salt water by reason of its greater density) to support the weight of the human body, as not only is it the principal circumstance to be remembered when exposed to danger of drowning, but because, when a due confidence in it is acquired, all difficulty in learning to swim soon ceases. It is to this end the practice recommended by Franklin is directed, and by reason of ignorance or forgetfulness of it, so many persons in the hour of peril, by their fruitless and injurious exertion, as it were *drown themselves*, who might by tranquillity and presence of mind be saved.

Although floating in water is sufficient to preserve from immediate danger, yet ought not the acquisition of the art of swimming to be neglected. Progression by this means depends, like the flight of birds, upon the law in mechanics of every action being followed by a corresponding action, (*i. e.* reaction,) but in an opposite direction; and, thus, the reaction of the air, compressed by the downward motion of the bird's wing, causes it to mount aloft in proportion to the force it communicates by that motion; so, the backward stroke, communicated by the simultaneous movement of the hands and feet of the swimmer, causes his forward progress in the water. When once familiarized with the support he derives from the water itself, he soon learns to make this stroke correctly, especially if aided and supported by some more experienced friend, a means far more desirable than the use of corks or bladders. Mr. Nicholson makes the following interesting remarks upon the subject:

Dr. Franklin's method of learning to swim by struggling to descend to the bottom is better calculated to give courage than skill; but at the same time it must be allowed that he who has acquired the former will require very little of the latter to become a swimmer. I have nevertheless remarked that those boys who were the most daring at plunging into the water before they could swim, have mostly arrived at the art later than others who have attended with some care to the method of striking their arms and legs. I have known several persons who, after acquiring the method of striking the arms separately, so as to have gained confidence to walk in water rising above the shoulders, and of striking the legs while the body was supported by the hands bearing on the ground in shallow water, have swam well on the first trial to combine both together. The rules for swimming swiftly and with little fatigue are few. The body must lie as near the surface, and the head as low, as conveniently may be. The knees must be kept wide asunder, in order that the obliquity of action in one leg may counteract that in the other, instead of their joint action producing a libratory motion of the body; and the stroke or impulse must be given with much more velocity than that employed in drawing the legs up again.

Many persons recommend that the motions of frogs when swimming should be observed, as so nearly resembling those employed by man.

In conclusion, we wish to impress upon all learners the necessity of knowing well the character, bottom,

* ARNOTT'S *Elements of Physics.*

depth, &c., of the places wherein they practise. To learn to swim, it requires that the water should reach at least to the shoulders, but when higher than this, or beyond the depth of the swimmer, he should never go unaccompanied by an experienced person. J. C.

The inward pleasure and satisfaction arising from the practice of virtuous actions, may be greatly overclouded in the present state by bodily diseases and misfortunes; and the inward pain and remorse generally felt on, or attending the commission of vicious and wicked deeds, may be greatly smothered, or not so much felt, from an eager pursuit after sensual gratifications, or an attendance on business and secular employments; but in another world there will be no diseases or misfortunes to overcloud the one, nor sensual gratifications or secular employments to smother or prevent the other being felt to all eternity.

The belief of a supernatural assistance is so reasonable, so consonant to our ideas of the Divine goodness and of human frailty, that philosophers, even in the heathen world, were sensible how much it was wanted, and have expressly asserted, that without Divine assistance no man could make a progress either in wisdom or virtue. What reason suggested to them, Revelation has ascertained to us, which represents us as temples and habitations of the Holy Spirit. —Rev. G. Carr.

Under the persuasion that no disaster can reach us without the permission of Him who watches over us with an eye that never slumbers, and a tenderness which nothing but guilt can withdraw from us, we can face those unknown terrors from which pagan philosophy turned away dismayed; we can look forward, unmoved, into futurity, and contemplate all the possible contingencies that may befal us, with intrepidity and unconcern; with the cheerfulness of a mind at perfect ease, reposing itself in full confidence and security on the great Disposer of all human events.—Bishop Porteus.

Labour, though it was at first inflicted as a curse, seems to be the gentlest of all punishments, and is fruitful of a thousand blessings: the same Providence which permits diseases, produces remedies; when it sends sorrows, it often sends friends and supporters; if it gives a scanty income, it gives good sense, and knowledge, and contentment, which love to dwell under homely roofs; with sickness come humility, and repentance, and piety; and affliction and grace walk hand in hand.—Jortin.

The slave who digs in the mine or labours at the oar, can rejoice at the prospect of laying down his burden together with his life; but to the slave of guilt there arises no hope from death. On the contrary, he is obliged to look forward with constant terror to this most certain of all events, as the conclusion of all his hopes, and the commencement of his greatest miseries.—Blair.

It was an excellent rule which Marcus Antoninus prescribed to himself in his private meditations: "Manage," says he, "all your actions and thoughts in such a manner, as if you were just going out of the world."

As the Supreme Being has expressed, and, as it were, printed his ideas in the Creation, men express their ideas in books, which, by this great invention of our latter ages, may last as long as the sun and moon, and perish only in the general wreck of nature. Thus Cowley, in his poem on the Resurrection, mentioning the destruction of the universe, has these admirable lines:

Now all the wide extended sky,
And all th' harmonious worlds on high,
And Virgil's sacred Work, shall die.

There is no other method of fixing these thoughts which arise and disappear in the mind of men, and transmitting them to the last periods of time; no other method of giving a permanency to our ideas, and preserving the knowledge of any particular person, when his body is mixed with the common mass of matter, and his soul retired into the world of spirits. Statues can last but a few thousands of years, edifices fewer, and colours still fewer than edifices. —Addison.

FRESH-WATER FISH.

VI.

The Carp, (*Cyprinus Carpio*, Linn.)

The Carp family (*Cyprinoidæ*) is the first of the five families into which Cuvier divides his second great division or order of osseous fishes. This order (Malacopterygii Abdominales) includes those fishes whose ventral fins are attached to the abdomen, behind the pectorals, and unconnected with the bone of the shoulder. This order includes the greater part of the fresh-water fish.

All the species of the genus Cyprinus, of which the common carp is the type, are inhabitants of fresh water; most of them have the faculty of bringing their lips forward, and drawing them back, in consequence of the anterior part of the mouth being formed of very small bones, connected by elastic ligaments. The mouth is small, the jaws feeble, and very often without teeth, but with teeth on the pharynx, which compensate somewhat for their absence on the jaws. Their bodies are scaly, and they have not the soft dorsal fin which occurs in the salmon family. They are the least voracious of all the finny tribes. The different species so much resemble each other, that it is often difficult to distinguish between them. Most of them are esculent, but their flesh is not of the first quality.

The common carp is found in the fresh waters of the southern and temperate parts of Europe; and it is only in consequence of the care bestowed on them that they are found in the more northern parts of the continent. Beckman says,—

We are told that these fish were brought from Italy to Prussia, where they are at present (1797) very abundant, by a nobleman whose name is not mentioned. This service, however, may be ascribed with more probability to the Upper Burggrave Casper von Nostiz, who died in 1588, and who, in the middle of the sixteenth century, first sent carp to Prussia from his estates in Silesia, and caused them to be put into the large pond at Arensberg, not far from Creuzberg. As a memorial of this circumstance, the figure of a carp, cut in stone, was shown formerly over a door at the Castle of Arensberg. This colony must have been very numerous in the year 1535, for at that period carp was sent from Königsberg to Wilda, where the Archduke Albert then resided. At present a great many carp are transported from Dantzic and Königsberg to Russia, Sweden, and Denmark. It appears to me probable that these fish after that period became every where known and esteemed, as eating fish in Lent and on fast days was among Christians considered to be a religious duty, and that, on this account, they endeavoured to have ponds stocked with them in every country, because no species can be so easily bred in these reservoirs.

Since the time when Beckmann wrote, until the present time, the sale of the carp has formed part of the revenue of the nobility and gentry in Prussia, Pomerania, Brandenburg, Saxony, Bohemia, Mecklenburg, and Holstein; and the treatment of this useful fish has long since been reduced in these countries to a kind of system, founded on numerous experiments made during several generations in the families of gentlemen well skilled in every department of husbandry. They construct carp ponds, and stock them with a few breeders, which in a short time fill the pond. It is recommended to have three ponds, viz., a spawning pond, a nursery, and a pond for adult fish. It has been found that such ponds as are surrounded by poor, clayey soils, or are exposed to the north and east winds, or have much wood about them so as to obstruct the rays of the sun, or contain hard or very cold water, or such water as issues from mines, moors, or mosses, will never allow the fish to thrive. Water-fowl must be kept away from the ponds during the spawning season. Every full-grown carp must be allowed a space in the pond equal to a square of fifteen feet: the more room they have, the more quickly will they grow, and the oftener they are fed the better. Mr. Forster has

known them to attain the weight of twenty-five pounds by being carefully attended to. During winter, should the pond be covered with ice, it must be broken in many parts, as without the admission of air the fish would soon perish.

An extraordinary but cruel method of improving carp for culinary purposes is described in the *Philosophical Transactions* for 1754.

It is very doubtful at what time the carp was introduced into England. The year 1514 is mentioned by Fuller as the time when Leonard Maschal, a gentleman of Plumstead in Sussex, introduced the tench, but there is some reason for doubting whether we ought to give him the honour of introducing the carp also. Carp are mentioned in the *Boke of St. Albans*, published by Wynkyn de Worde, as early as 1486. This *boke* contains a treatise on fishing and several more serious tracts, compiled by Dame Julyans Barnes, prioress of the nunnery of Sopwell near St. Albans, a lady celebrated for her learning and accomplishments. The reason for her publishing the treatise on fishing in the manner in which it appears, is given by her in the following words:—"And for by cause that this present treatyse shoulde not come to the hondys of eche ydle persone whyche wolde desire it, yf it were emprynted allone by itself and put in a lytyll plaunflet; therefore I have compylyd it in a greter uolume, of dyuerse bokys concernynge to gentyll and noble men, to the entent that the forsayd ydle persones whyche sholde haue but lytyll mesure in the sayd dysporte of fysshynge, sholde not by this meane utterly dystroye it." Speaking of the carp, she says, that, "it is a deyntous fysshe, but there ben but fewe in Englonde. And therefore I wryte the lasse of hym."

In this country the carp usually attains the length of from about twelve to sixteen inches; but in warmer climates it will grow to two, three, or four feet, and attain a weight of twenty, thirty, or even forty pounds. Its general colour is a yellowish olive, much deeper or browner on the back, with a slight hue of gold on the sides: the scales are large, rounded, and distinct; the head large, and the mouth furnished on each side with a cirrus or beard, and above the nostrils a smaller pair: the lateral line is slightly curved, and marked by a row of blackish specks; the fins are violet-brown, with the exception of the anal, which has a reddish cast: the dorsal fin is broad, or continued to some distance from the middle of the back towards the tail, which is slightly forked.

The carp attains a great age: specimens have been spoken of as being 150 or 200 years old. Their colour is less deep as they get old, and in advanced age it borders on white. In old age, too, they are subject to a singular malady: the head and back become covered with moss-like excrescences. This disease seems also to affect young carp which inhabit snow-water, or water which has become putrid: snow-water also produces pustulous germs under the scales, which fishermen call the small-pox. Their intestines also often contain worms, and their liver is subject to ulceration.

The food of the carp is larvæ of insects or worms, small testacea, grains, roots, and the young shoots of plants. They devour readily the leaves of lettuce, and other tender plants, which are thrown into the water. The leaves and seeds of salad, according to Blotch, fattens them more quickly than any other food. They may also be observed darting out of the water to seize the insects which hover over its surface. The concussion of their jaws or lips in eating, occasions a peculiar noise which may be heard at some distance. They can remain a long time without food, yet when it is offered them in abundance they often overfeed themselves, and perish from the effects of their gluttony.

Carps delight most in waters where the current is not strong. In summer they frequent weed beds and are particularly fond of those aquatic plants of stagnant waters which spring from the bottom and rise to the surface. In rivers they frequent the still deeps which have an oozy bottom, with rushes and reeds, where they find a convenient nidus for their spawn. During winter they conceal themselves in the mud and pass many months without food, collected side by side in great numbers. In the spring, those that inhabit running waters quit their winter abode to seek more tranquil haunts. If their progress should be obstructed by any barrier, they endeavour to leap over it by placing themselves on their side, bringing the head and tail together and then suddenly letting go this sort of circular spring.

The carp is surprisingly prolific; the quantity of roe is so great, that it is said sometimes to have exceeded the weight of the emptied fish when weighed against it. As it frequently happens with prolific animals, the greater portion of the spawn is devoured by other animals; and the young ones are exposed to numerous dangers. The carp grows rapidly, and at the age of three years it has few enemies to fear, except the otter and the larger pikes. The eggs of the carp, as well as those of the sturgeon*, are made into caviar, which is highly esteemed. The bile of the carp furnishes a green colour to painters, and was formerly used in medicine.

The carp is so tenacious of life that it may be kept for a considerable time in any damp place, though not immersed in water. In winter they may be transported to a considerable distance by packing them up in plants, in moistened linen, or in snow, and putting a bit of bread steeped in brandy in their mouth. In Holland they are suspended to the roof of a cellar in nets full of damp moss, which is frequently watered; and they are fed with bread and milk or with chopped vegetables.

They are transported to Paris in well-boats, which are often stocked at the distance of more than a hundred leagues from that capital.

The *Cyprinus auratus*, gold fish, or golden carp, has been already described in *Saturday Magazine*, Vol. XVI., p. 134.

* See *Saturday Magazine*, Vol. XVIII., p. 92.

THE CARP.

THE scandal brought upon religion, as it was not contracted by the irregularities of one or two persons, but by associated and common crimes; so neither will it be removed by a few single and private reformations. There must be combinations and public confederacies in virtue, to balance and counterpoise those of vice, or she will never recover that honour which she acquired by the general piety of her professors.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 583. SUPPLEMENT, JULY, 1841. { PRICE ONE PENNY.

A BRIEF HISTORY OF THE FINE ARTS. No. I.

TERMINAL FIGURE OF PAN.
(From the Townley Gallery.)

PHOCION.
(From a Drawing by Flaxman from the Antique.)

O Greece! thou sapient nurse of finer arts!
Which to bright science blooming fancy bore;
Be this thy praise, that thou, and thou alone,
In these hast led the way, in these excelled,
Crowned with the laurel of assenting Time.—THOMSON.

INTRODUCTION. ORIGIN OF THE FINE ARTS.

THE Fine Arts are usually understood to include those productions of human genius and skill which are more or less addressed to the sentiment of taste. Their origin has been the subject of much learned display and speculation; but considering them to be purely *imitative* in their nature and origin, and that their highest aim is, by a delicate combination, to draw to a single point the scattered excellences of nature, so as to excite pleasurable emotions, capable also of informing, elevating, and improving the mind, we must refer the invention of these arts, not to any single people, but to every country where human reason has been at all cultivated. There is a love of ornament and display naturally implanted in the human mind, and a strong tendency to copy surrounding natural objects. Even the savage finds delight in adorning his body, and passes much of his time in executing the rude carvings on his spear shaft or canoe, which simple exhibitions of his skill require only a general cultivation of the mind of the artist to raise into tasteful decorations.

The imitative arts may therefore be considered indigenous in every country; but, like the productions of the earth, they assume different forms according to the nature of the climate and the wants it produces. Not only do the fine arts exist in some form or other in every country, but we find them in about the same stage of advancement among all nations of the same degree of civilization in every age and clime. It is not therefore either necessary or philosophical to go back to the ancient Egyptians, to the Scythians, or to the aboriginal Greeks, for the origin of the fine arts. It is true that little diversity is found even among distant nations in the gradations from rude art to refined invention. In the early stages of society men of all countries closely resemble each other in their feelings, wants, means of gratification and improvement. Hence that resemblance of style which has been traced in the arts of many distant nations ought not to be taken as evidence of a common origin. The early Egyptian and Grecian statues display similar lineaments and corresponding attitudes; simply because the artists of each had to overcome the same difficulties, and brought nearly the same amount of information to bear upon them.

As the mechanical arts originated in the physical wants of man, so the fine arts originated partly in the desire to embellish the rude productions of necessity, and partly also to supply certain sensible representations of sentiments and ideas which to the circumscribed capacity of unenlightened ages must be extremely vague. "A supreme, spiritual, invisible intelligence being infinitely beyond the reach of vulgar apprehension, was under the necessity of being shadowed out to their senses through the medium of some more obvious and familiar imagery. The attributes of this intelligence—power, justice, mercy, or goodness—distinctly considered, were separately personified, and converted into objects of sense. The various passions and affections of

humanity—joy, sorrow, love, hatred, fear, and revenge—were in like manner embodied and clothed with material shape and form. To this it may be added, that the first civilizers of mankind, or inventors of useful arts, were in that rude state of nature beheld with a distant reverence, nearly allied to adoration. The advantages resulting to society by their discoveries and institutions seemed so perfectly consonant to the idea of a superior existence, that the grateful simplicity of their admirers readily subscribed to their deification. This system, then, of mythology, this state of polytheism, were, as it seems, more particularly favourable to the introduction of sculptors and painters, whose works alone could furnish sensible representations, and thus determine the object of devotion. The want, perhaps, of their earlier assistance had before that time directed the indiscriminate worship of mankind, not only to animals, but to inanimate substances, and even rude unorganized matter. —GRATTAN.

The early history of the fine arts, now veiled in a mist of fable and antiquity, involves details which appear marvellous and incredible, as distant objects when beheld through a dense medium, will generally assume an extravagant and unnatural magnitude. The national vanity of the imaginative Greeks was gratified in referring the origin of the politer arts to their tutelar divinities. Love, celebrated by the mythologists as the governor of nature, was the parent of the arts; and music, his first born. The first artist was a young girl, who, perceiving the profile of her lover's features cast on the wall by the strong light of a lamp, drew the first recorded outline from this cherished object of her affections. From such a trivial beginning, according to the Grecian apologue, arose those arts whose softening and humanizing qualities have moderated the barbarism of man, and alleviated the disastrous effects of vice. The Greeks represent Dædalus as the restorer of the arts after the deluge had involved in ruin all arts, whether elegant or useful, however imperfect or however improved. Although a portion of the excessive admiration bestowed on him originated probably in the ignorance of his admirers, yet he is generally esteemed the founder of the Athenian school. Before his appearance, the Grecian statues were mere shapeless stocks, their eyes closed, their arms hanging down as if glued to the body, and their feet joined without life, attitude, or gesture. Dædalus infused some spark of life into these stiff, motionless trunks; and his disciples, gradually improving, attained the difficult path which led to the production of those existing models of symmetry, elegance, and grandeur.

Although we must dismiss as groundless any theory which advocates the exclusive discovery of the fine arts, yet the attainment of excellence in the pursuit and practice of the arts generally has been easier to some nations than to others. "How far moral and physical causes operate on the genius of an age, has been a subject of inquiry frequently discussed from the days of Velleius Paterculus to our own. Certain it is, that at particular revolutions of time, some kind of supernatural influence, or, as it were, some celestial emanation, seems to descend on a particular people, lights up their invention, heightens and spiritualizes their imagination, and calls into life and action their dormant faculties. Genius will ever demand a friendly soil to flourish and dilate itself, while, like the sensitive plant, it ever shrinks and sickens at the rude touch of tyranny and oppression." We do not propose to confine our inquiry to the progress of the arts among one particular people; but among the nations of antiquity, as far as may be convenient, in chronological order.

COMPARISON BETWEEN PAINTING AND SCULPTURE.

Before we enter on the task of sketching the history and progress of the noble art of *Sculpture*, it may be well to make a comparison between it and the sister art of painting, and to endeavour to explain some of the causes which operate in producing the very different emotions, which all persons of taste must be conscious of, in viewing representations on stone and on canvass. In doing this, we shall have occasion to adopt the sentiments of Mr. Milman on the subject, and where we deem it desirable, we shall present those sentiments to our readers in the eloquent language of their author.

Sculpture and painting address the imagination through the sense of sight; and although in their essence strictly imitative of forms really existing, and whose existence is conceivable, yet by awakening and keeping alive the imagination, they become purely ideal, and present us with forms, closely adhering to their types in nature, but wrought to supernatural grandeur or beauty. To the imagination we chiefly owe the creations of elevation, of terror, or of mild and placid delight thus excited; emotions differing with our constitutional and mental temperament, and in some respects with our habitude and familiarity with addresses of this nature. The mind breathes life and motion on the images represented in stone or canvass, and the imagination wavers from the representation to the thing represented, and forms for itself a sort of indistinct existence from the qualities of both. The ideas of motion, breath, animal warmth, are so inseparably connected with our notion of the animal form, that a figure in marble or in colour inevitably suggests what it cannot express: and in this sense imagination supplies the deficiency of art. "But previous to this address to the imagination, painting has an advantage which sculpture has not at all, or in a far less degree. The harmony of rich and brilliant colours has doubtless a gratifying effect on the sense, and produces a pleasing irritation on the organ of sight. The spotless white and glossy smoothness of marble may indeed make a sort of cool and soothing impression on the organ, but this is faint and feeble in comparison with the sensual enjoyment proceeding from the mellow contrast and rich variety of a Venetian picture. Thus painting in a manner conciliates a welcome reception by its previous flattery of the sense: for doubtless we should look with delight on a mass of hues, mingled and harmonized with the consummate art of Titian, though there were no representation of nature, but an unmeaning surface of colour. The pleasure would indeed be brief, and the subsequent dissatisfaction and disappointment of the mind at being thus neglected and sacrificed to the sense, would be unpleasant and even painful; but still the interval between the first glance and the discovery of the deficiency would assuredly be pleasurable."

A very striking advantage likewise results to painting from the wide scope afforded by perspective, and by colouring, and its consequences of light and shade. The range of objects selected for imitation is much more extensive, and the powerful aid of accessories is brought to increase the illusion. Painting has the power of fixing the attention to the point where she wishes it to center, and diverting it from what it is her interest to conceal. Sculpture on the other hand is cold, naked, and severe, without accessories to aid the illusion, and destitute of power to dazzle the sense. It must therefore be exquisitely conceived and finely wrought, before the imagination will yield to its impression, and endow it with motion and life. The concentration of mind necessary to imbibe the spirit of a fine piece of sculpture, is, however, very favourable to our enjoyment of the ideal. "Once beyond the world of positive reality, we expatiate readily, as far as the artist will lead us. It is then, after this effort and exaltation, nothing objectionable that the shapes we behold surpass all that we have hitherto seen in human limb and feature. We have already stept beyond nature, by looking on a stone with somewhat similar feelings which we experience in looking on a human being; and it is but little farther to sympathise with what differs from humanity only in its perfection, with what is incompatible with truth only in its untrue degree of excellence."

The peculiar connection of sculpture with the Grecian polytheism, and of painting with Christianity, has often attracted attention. Grecian artists appear to have known little of the breadth and depth of colouring, the magical effect of light and shade, and the delicate perspective of modern painting. The inferiority of all sculpture on Christian subjects is equally notorious. A German critic accounts for this by saying that the mind of the Grecians was, like his atmosphere, all light, while that of the Christian, like his variable northern sky, presents an interchange of light and shade. The mythology of the former was a series of self-existent beings of different powers and attributes. Many of his divinities were mere immortal men, who lost only the grosser parts of their nature, but retained their distinctive forms and qualities. The Greek artist therefore collected from the human form all that was noble and majestic, and purified it from that which was gross, or inharmonious, and thus embodied the very essence of grace, dignity, and power. The Christian, with a mind influenced by his climate, and awakened by the revelation with which he has been favoured, looks into the most important and mysterious subjects, and meditates on eternity, on his own nature, and on the relation in which he stands to the Omnipresent God. Much that is mysterious and incomprehensible meets him at every point of his inquiry, and calls for the exercise of faith and

humility. He feels that it is impossible adequately to personify the subjects which most affect him. The sublime with him has always a mixture of the vague and indefinite, and is therefore the sublime of painting, and not of sculpture. The partial sight and half revealing of objects is in the power of painting, but not of sculpture.

"From its material and character, sculpture must be defined and decisive; painting may be indeterminate and vague: in sculpture all meets the eye; in painting more often is meant than meets the eye: sculpture must show all fully and absolutely; painting but partially and indistinctly: the mind grasps the whole in sculpture; in painting it ever thinks there is more to grasp: sculpture satisfies and fills the imagination it addresses; painting excites it till its own powers fail, rather than the matter suggested to it. It is this filling and satisfying the imagination that makes unity so absolutely necessary in sculpture: all must be a balance, an harmony, a severe simplicity. Sculpture must excite one general emotion, one tone must predominate, one character pervade the whole; for the imagination, if diverted, is ever willing to wander; if it wanders, it cannot be satisfied.

"The softer magic of beauty seems also to work by a different spell in the two arts; and this appears the source of the difference. In sculpture we behold the most exquisite symmetry, a graceful melody of lineament; each feature is, as it were, the sister of the other; the hair is clustered with a light regularity. Still we feel an indescribable want; whatever emotion we have is not merely passionless, but somewhat cold. Our admiration is not merely devoid of the grosser attraction of sense, but even of feeling; the beauty is there which enraptures the mind, but not the loveliness which enthrals the heart. This want is expression, which the hue of the countenance only and the eye can give. The stronger passions alone affect the whole face, draw down the lip, arch the brow, or give a languid or contracted cast to the general features. But the mild affections speak and breathe in the colouring of the face, in the settled light or the fugitive blush, but chiefly in the eye. From these two sources the infantile smile and the maternal look of love, all those softer enchantments of beauty which need only to be truly embodied, being too fine and delicate to admit any heightening of the imagination, are in the power of the painter alone."

While it is acknowledged that painting has the power of going more deeply to the heart, and of striking those fine chords which respond not to the touch of sculpture, yet it is undoubtedly true that the contemplation and study of the faultless beauty and majesty of the statuaries' master-pieces refine the mind from what is gross; the imbibing their grand and chaste spirit nourishes that loftiness of soul and delicacy of feeling which is indispensable to true taste.

Taking this view of sculpture, and regarding it as the elder sister of painting, we proceed to notice the most ancient existing monuments of the art, and to take a brief survey of Egyptian Sculpture.

Section I. On Egyptian Sculpture.

Among the existing monuments of the ancient Egyptians, examples are found of their rudest as well as most perfect workmanship, thus favouring the opinion that we have specimens of their earliest as well as latest productions.

The institutions of the Egyptians did not permit the introduction of improvement or change, so that, for a long and unknown period up to the conquest of Egypt by Cambyses, the style of art is exceedingly rude and tasteless. The lines forming the general contour are destitute of the graceful curves of nature;—they are straight and projecting; the position of the figures is stiff and unnatural. In sitting figures the legs are parallel, the feet squeezed together, and the arms fixed to the sides; but in the figures of women the left arm is folded across the breast; the bones and muscles are scarcely discernible; the eyes are flat and looking obliquely, and the eye-brows sunk,—features which quite destroy the beauty of the head; the cheek-bones are high, the chin small and pointed, the ears generally placed higher than in nature, and the feet too large and flat. Drapery is almost absent, and the few specimens that occur only serve to show the incapacity of the hereditary artists who executed it.

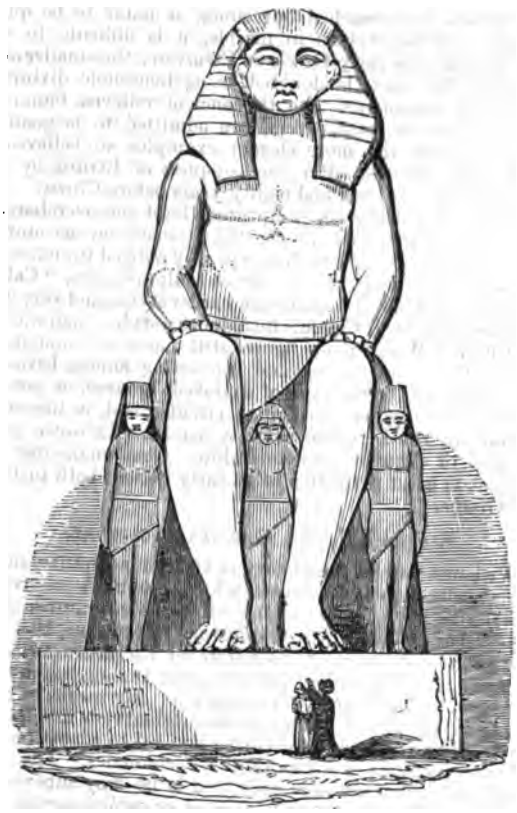
The remains of ancient grandeur still existing on their native site, and the numerous remains preserved in European museums, afford abundant means of testing the merits of the original or native sculpture of the Egyptians. These remains consist of colossal statues; groups or single figures of about the natural size; and hieroglyphical and historical relievos. These productions were not only formed by the chisel, but also carefully polished. Even those on the summit of an obelisk, which could only be viewed at a distance, were finished with as much assiduity as if they were to be subjected to a close inspection. As they are generally executed in granite or basalt stones of a very hard texture, it is impossible not to admire the indefatigable patience of the artists.

The number of colossal statues in ancient Egypt, as recorded by ancient writers, would seem incredible, were it not authenticated by numerous existing remains. These and other enormous works have struck every visitor with wonder and awe. Herodotus says, "One of their buildings is equal to many of the most considerable Greek buildings taken together;" and a modern observer remarks, "These works are so prodigious, they make everything we do look little." Another says, "The Egyptians had notions of durability in their works which no other nation has succeeded in imitating; they seemed to work as if they laughed at time, war, barbarism. Quantity was everything with them, or almost so; quality but little. They wished to please themselves and astonish posterity, and they succeeded. It would, perhaps, be impossible to adduce a more striking example of disregard of time and patience of toil than the formation of a statue of granite, sixty or seventy feet high. "Of these mighty labours," says Dr. Memes, "some are hewn from the living rock, and left adhering to the natural bed; as the celebrated Sphynx, near the Pyramids of Ghizeh, and various sculptures on the rocks of the Thebaid, which look the shadows of giants cast by a declining sun." Others appear to have been first built up of square blocks and then worked into shape. But the greater part are formed of one block of enormous dimensions. Many figures of the colossal Sphynx appear to have been ranged in considerable numbers on the opposite sides of the approach to the great temples. Some of the human colossi were isolated, and were probably regarded as objects of worship; others were used as columns. The largest statues now known are in a sitting posture; these are at Thebes; the altitude of each figure, exclusive of the lower plinth of the throne, is fifty feet, the material, red granite; the head in each figure is looking straight forward; the arms are pressed close to the sides; the palms and fore-arm extended, and resting upon the thighs; the lower extremities are perpendicular and apart. This posture, which may be described as characteristic of the entire class, is little calculated to convey any sentiment of grace or ease. Yet, in these vast, although comparatively uninformed labours, we discover more of the sublime than arises from mere vastness, or even from the recollections of distant time with which their memory is associated. They are invested with a majestic repose—with a grand and solemn tranquillity, which awes without astonishing; and, while they exhibit the greatest perfection to which Egyptian art has attained, in colossal statues generally, we discover occasional approaches to truth and nature, with no inconsiderable feeling of the sweet, the unaffected, and the flowing in expression and contour."

Some of the earliest efforts of Egyptian sculpture seem to have been made, not upon detached masses of stone, but upon the rock itself, in the process of excavating caverns for the purposes of devotion. Such statues do not greatly exceed the natural size, and, being detached when finished, were removed to other situations, and frequently copied in detached blocks. Hence, probably, arose that singular feature in Egyptian statues, viz., a pilaster running up the back of the figure. In the remains of sculpture preserved in the excavations of Philoe, Elephantis, Silsilis, and at El-Malook, in the tombs of the Theban kings, the ornaments vary from simple relievos to complete statues. In these latter, the figures are not completely detached, a posterior portion being always left adhering; while, if the statue be formed by cutting round a recess, a pilaster behind runs up the whole height, intended probably to save labour, or to increase the strength. When such statues are detached for the purpose of removal, the pilaster is still retained, probably from the same motives or perhaps in order to obtain a surface for the inscription of hieroglyphics, or probably from a blind adherence on the part of the sculptor to the types left him by his ancestors. There is a remarkable sameness about all these efforts: the design and the attitudes are strangely limited, altogether showing the operation of prescriptive rules and fixed models, whereby the skill and imagination of the artist were almost as effectually constrained, as the productions of his chisel.

The surfaces of many of the ancient Egyptian structures are frequently covered with relievos. In these, where variety of action and situation is required, the Egyptians display their deficiency in the knowledge of anatomy, mechanics, and geometry. In all these monuments the king or hero is represented three times larger than the other figures. Whatever is the action,—a siege, a battle, taking a town by storm,—there is not the smallest idea of perspective in the place, or magnitude of figures or buildings. Figures in violent action are equally destitute of joints, and other anatomical form, as they are of the balance and spring of motion, the force of a blow, or the just variety of line in the turning figure. "In a word," continues Flaxman, "their historical art was informing the beholder, in the best manner they could, according to the rude characters they were able to make. From such a description, it is easy to understand how much their attempts at historical representation were inferior to their single statues."

It must however be mentioned, that occasionally, in the historical relievos, there appear the rudiments of higher art, with less of convention, and more freedom of imagination. The hero of the piece is always represented in the bloom of youth, and there is something approaching to grandeur and beauty of conception, in his figure as represented on some of the monuments. Yet these separate excellencies are completely obscured by the absurdity of representing him at least double the stature of the figures surrounding him.



EGYPTIAN COLOSSAL STATUE.

Winkelman has attempted to class Egyptian sculpture into three periods or epochs: The first he calls the ancient epoch, which was the era of original or native sculpture, including the time which elapsed from the origin of the Egyptians to the reign of Cambyses, in the sixty-second Olympiad, or five hundred and twenty-six years before Christ: the middle epoch, or era of Greco-Egyptian sculpture, embraces the period during which Egypt was under the dominion of the Persians and Greeks: and the third, or last, being the era of imitative sculpture, improperly denominated Egyptian, prevailed about the time of Hadrian. By a subsequent alteration of his plan, Winkelman extended the first of his periods to the establishment of the Greeks under Alexander the Great and his successors. This extension of the ancient period is generally considered just, for Plato, who flourished about a hundred and thirty years after Cambyses, expressly states that in painting and the other imitative arts, the Egyptians had made no change; their productions were neither more beautiful, nor worse, than in remote ages. The art of sculpture, like the other arts, was in Egypt subject to strict laws, and all works of a religious nature were subject to the forms and attitudes prescribed by the authority of the priesthood. The constitution of the Egyptian government was likewise opposed to changes and innovations of any sort, and even the trades and professions of the people were made hereditary in the respective families. The exertions of art were necessarily feeble under such a system as this: taste and invention were excluded; artistical ambition was kept down; and the arts remained unchanged for ages. All the sacred figures of Egypt present a resemblance, or rather identity, which renders it very difficult to fix the relative antiquity of the specimens: in general, the information is gathered rather from the situation in which the figure is found, and the signs of rude antiquity or of Grecian art which surround it, than from any evidence presented by the statue itself. The representation of animal and vegetable forms could hardly be subject to the same strict laws, and it is here that we expect to find some tokens of the various degrees of ability in artists. Accordingly we find a nearer approach to correctness of form and natural roundness of figure in representations of animals, than in the sculpture of the human shape.

The materials used in Egyptian sculpture were wood and stone, metal and clay. The wooden figures often found on mummies are of the native Sycamore of Egypt, and this was also, probably, the material of their larger statues in wood. Herodotus tells us that King Amasis sent two wooden statues of himself as a present to the temple of Hera (Juno) in Samos. The same historian informs us, that the high priests of Jupiter at Thebes, preserved the remembrance of their priesthood by each making, during his lifetime, a colossal wooden figure of himself; and that as many as three hundred and forty-five were to be seen at Thebes, when Herodotus visited that city. Belzoni found two wooden figures of very fine workmanship in the tombs of the kings at Thebes; these were about seven feet in height.

In their labours on stone, the Egyptians employed several kinds of material: one soft, a species of sandstone; and three very hard, a calcareous rock out of which the tombs, with their sculptures, are hewn; basalt or trap of various shades, from black to dark grey, generally used in the smaller statues; granite, more commonly of the description named by mineralogists *granites rubescens*, of a reddish hue, with large crystals of feld-spar; or of a dark red ground, with black specks, as in the magnificent head in the British museum known as the head of Memnon. The latter description of granite is rarely used. Small figures have been found of a composition similar to the bronze of later times, but metal appears to have been sparingly used. In the tombs, small images of porcelain and *terra cotta* are not unfrequent.

Differing from the views of Winkelman with regard to the epochs of Egyptian sculpture, Dr. Thomas has come to the conclusion that there was but one period really characteristic of the nation, and that the genius of this indigenous and aboriginal art is to be discovered only in the most ancient monuments; it having suffered various changes under the Greeks and Romans. The methods employed by the Egyptian sculptors in working their materials, are matters of mere conjecture. Modern tools are found to make little impression on their porphyry, granite, and basalt, and our ideas become confused, when we reflect upon the amount of patience and labour required to produce only a few of these gigantic forms, which are scattered in such profusion throughout that remarkable country. The great proof of the superior antiquity of Egyptian sculpture over that of Asia is found in its uniform simplicity; the grand lines of composition are few, accessories are sparingly introduced, and where they are made use of, they bear the same sober, massive character. While many of those nations once possessing the finest regions of Asia, have left scarcely a single memorial of their ancient greatness, and while a shapeless mass of ruins remains in some cases the sole testimony of their proudest works, the monuments of Egypt seem to bid defiance to time and change, and to stand in their stern majesty as a lasting example of the perseverance and toil of a most extraordinary people.

Section II. On Tuscan Sculpture.

Of Phœnician sculpture we shall not attempt any description. We read of temples adorned with statues, and glittering with gold and emeralds, but all their great works

have been destroyed, and the medals of the Carthaginians (though this people was a colony of Phœnicians) do not permit us to judge of the merits of their ancestors.

The Etrurians, Etruscans, or ancient Tuscans, called by the Greeks Tyrrhenians or Tyrsenians, and by themselves Rasena, are the people who inhabited ancient Etruria, and who at a period when the rest of Europe was immerged in ignorance and barbarism are said to have attained a high degree of civil and social refinement; they are also said by some writers to have made considerable progress in sculpture, at an earlier period than the Greeks; but this opinion has been doubted by many, and it is even doubted whether the Etruscan has any right to be considered a distinct school of sculpture. Works of art were probably executed in Etruria, previous to the arrival of the Greek colonists in North Italy and South France; "but," says a writer on this subject, "the more rude and ancient specimens are exactly in the style of the very ancient Greeks; from whom they appear to have learnt all they knew; and whose primitive style they continued to copy, after a more elegant and dignified manner, founded upon more enlarged principles, had been adopted by the Greeks themselves. Hence their works may be justly considered as Greek, or, at least, as close imitations of the Greek; they having followed their archetypes strictly and servilely, though at a great distance, if reckoned by the scale of merit. The proximity of Italian colonies, where the arts were cultivated with the most brilliant success at a very early period, afforded them the most favourable opportunities of obtaining instruction; and if they availed themselves of it at all, it is rather wonderful that their progress should have been so slow and comparatively imperfect."

ETRUSCAN PATERA.

Another writer on this subject says:—

"The renown which belongs to a nation that excelled in the arts, has become, as it were, the inheritance of the Etruscans. But, from the peculiar constitution of government and society in ancient Etruria, it has been conjectured, not without appearance of reason, that the works in bronze and clay, and the bas-reliefs attributed to them, were the produce, not of the dominant race, but of their subject bondsmen or serfs; and that in reality the Etruscans, properly so called, were as little given to the arts as the Romans, by whom, in their turn, they were subdued. The striking difference observable between Tarquinii and Arretium in their works of art, seems to correspond with the different origin of the earlier inhabitants of Northern and Southern Etruria. Volaterra was naturally led, by the stone quarries in its neighbourhood, to engage in the works for which it became celebrated. The two former cities, however, wrought only, or chiefly, in clay. Arretium made red vases, with elegant figures in relief, in a style altogether peculiar. Those of Tarquinii were painted, and both in colour and design resemble some discovered near Corinth, of which Dodwell has given engravings. Painted vases are found only in the district of Tarquinii, and where they occur those of Arretium are never met with; besides, they differ from the Campanian in all those peculiarities for which the Greek works of the same kind are distinguished. The resemblance which is thus found to exist between the vases of Tarquinii and of Corinth irresistibly reminds us of the story of Demaratus, who is said to have been accompanied by the potters Euchir and Engrammus; a circumstance evidently designed to express that Tarquinii derived from Greece her skill in handling clay, and the elegant drawing with which her vases were adorned. The earliest Etruscan statues were of clay; but the statues belonging to the first ages of Rome were almost uniformly of bronze, and the master-pieces which shed lustre on Etruscan art are all of the same material. That this art received its refinement from the Greeks, cannot, we think, be reasonably questioned. Works of primitive antiquity attest its original rudeness; and to the Greeks alone, improving on Egyptian models by a close study of the finer forms and proportions of nature, belonged that skill which throws life and beauty into the delineation of the human figure. Hence the subjects of many of the most beautiful Etruscan works of art are obviously taken from the Greek mythology, which, in Etruria, was found as well adapted to the purposes of the artist, as in the land to which it was native. But the Etruscans, when their taste had once been formed, treated their own conceptions in the spirit of their masters; and, though no doubt inferior in grace and delicacy of execution, they acquired a correctness in drawing which may almost be stated as a national characteristic. In the she-wolf of the Capitol, we have an example of the perfection to which Etruscan art had attained about the middle of the fifth century of Rome; nor are the finest gems probably of a much more recent date*."

The authenticity of many of the specimens, called Etruscan, which have reached our times, is liable to be questioned. Of the statues in marble, it is difficult to say whether they are early Greek or Etruscan; the smaller ones in bronze are less to be doubted, being household divinities or merely ornaments. On the ancient relievos found in various parts of Italy, several are admitted to be genuine Etruscan; but the more elegant examples are believed to have been executed after the conquest of Etruria by the Romans, two hundred and eighty years before Christ.

The style of Etruscan sculpture is hard and overcharged, and became proverbial among the Romans on account of these defects. Quinctilian has expressly noticed it, and, when speaking of the work of some Greek sculptors, says, "Callon and Egesias made statues in the harder styles, and very like the Tuscan figures: Calamis introduced a style which was not so stiff, and Myron made figures still more soft and bending." The most curious and interesting among Etruscan remains belong to the class of engraved bronzes, or *paterœ*, small vessels used in sacrificing; circular, and, in the single instance of the Etruscan, with a handle. Etruscan gems are also of exquisite workmanship. Gem engraving was brought to great perfection at an early period, both in Italy and Greece.

Section III. On Grecian Sculpture.

We come now to the history of Grecian sculpture, and to the consideration of the causes which produced so great a superiority in the works of the artists of Greece, over those of all other nations. Ancient history informs us, that the Greeks did not emerge from a state of barbarism till long after the Egyptians, the Chaldeans, and Indians had arrived at a considerable degree of civilization. By means of colonies from Egypt and Phœnicia, the original rude inhabitants of Greece were gradually civilized and led to adopt the arts and the religious worship of those countries. The first efforts of Grecian art were rude, and in no way superior to those of other nations; and the ancient, or *archaic* period, as it is called, of Grecian art extended through eight almost unknown centuries nearly to the time of Phidias.

A variety of causes appear to have contributed in rendering the Greeks famous as sculptors. Their beautiful country was peopled, by the warm imagination of its people, with those beings, either divine or heroic, which constituted its theology. Their winding streams, flowery plains, and azure mountains, were looked upon as at once the residence and the representatives of these beings, and it is no wonder that attempts to present these objects in a more tangible form should lead to the exercise of skill, and should excite the emulation of ardent minds. The influence of climate over the human body is too evident to require that we should dwell on it here: and we may say with a modern writer, "Perhaps no country in the world enjoys a more serene air, less tainted with mist and vapours, or possesses, in a higher degree, that mild and genial warmth which can unfold and expand the human body into all the symmetry

* *Encyclopædia Britannica.*

of muscular strength, and all the delicacies of female beauty, in greater perfection, than the nappy climate of Greece; and never was there any people that had a greater taste for beauty, or were more anxious to improve it."

The opportunity given to artists of studying their models in the public places, where the youths of Greece performed their exercises quite naked, may also be mentioned as a reason for the wonderful progress of this people in sculpture. Also, the high regard bestowed on those who attained to eminence in the art. "An artist could be a legislator, a commander of armies, and might hope to have his statue placed beside those of Miltiades and Themistocles, or those of the gods themselves. Besides, the honour and success of an artist did not depend on the caprice of pride or of ignorance. The productions of art were estimated and rewarded by the greatest sages in the general assembly of Greece; and the sculptor who had exercised his task with ability and taste, was confident of obtaining immortality."

We have already spoken of Dædalus, the first sculptor among the Greeks who attained sufficient celebrity to ensure the existence of his fame. More than one artist, however, bore the name of Dædalus, and, indeed, this name among the ancients, appears to have been synonymous with universal genius; for Dædalus is said not only to have constructed the labyrinth of Crete, but to have been the inventor of the wedge, and of wings, besides being the greatest sculptor of his time. His invention of wings is said to have formed his means of escape from Crete, to avoid the revenge of Minos. Some understand this merely to mean that he put sails to the vessel which bore him from the island. The works of Dædalus were in wood: the first Greek sculptors that became famed for working marble are said to have been Dipœnus and Scillis, about 580 years before Christ. At about the same period the art of casting brass, and melting it into statues, was taught by Rhœcus and Theodorus, both Samians. The plastic art, or modelling in clay, appears to have been known considerably earlier. A fragment of a statue, believed to be the work of Rhœcus, is now in the British Museum. It is a head of Diomede of the size of life, and forms one of Mr. Knight's collection of bronzes.

It would be foreign to our purpose to give a list of the numerous sculptors who adorned the age previous to the birth of Phidias. The little islands of Samos and Chios produced many skilful artists, and the cities of Sicyon, Ægina, Corinth, and Athens, whence arose the primitive schools of Greece, still continued to send forth sculptors worthy of their ancient celebrity.

The birth of the great master of the art of statuary, the renowned Phidias, took place at Athens, in the 73rd Olympiad, about four hundred and eight years before Christ. His mind is said to have been early adorned with all the knowledge which bore on his profession. He was skilled in history, poetry, fable, geometry, and the optics of the day; and under the reign of Pericles, who commanded the treasury of Athens, and the allied states, he had the most favourable opportunities of exercising his talents. His chief talent appears to have lain in representing the divinities of his country. Cicero tells us that he did not copy visible objects, and thus represent their features and resemblances, but formed to himself an idea of true beauty, upon which he constantly fixed his attention, and which became at once his rule and model, and guided at once both his design and his hand. To the direction of this remarkable man, the public works of Athens were consigned, and under his superintendence the celebrated temple of the Parthenon was produced, the beauty of whose embellishments may be gathered from the remains of exquisite statues and alti and bassi relievi now in the British Museum and known as the Elgin Marbles. The Temple of Apollo Epicurius near Phygaleia was the work of the same master-mind, and it is believed that the Phygaleian (now also in the British Museum) were the early, and the Parthenon sculptures the finished, productions of Phidias's school.

The statues in bronze executed by Phidias, were, in point of number and excellence, quite unrivalled. His ivory statues* were also without parallel; and he even condescended to work in the meaner materials of wood and clay. Pliny and Pausanias have given us some account of the different methods used by Greek sculptors in the fabrication of their metal statues. The latter historian describes a brazen statue of Jupiter at Lacedæmon, the most ancient of all the works in that metal then known. This statue was of hammer-work, fabricated in separate portions, which were afterwards closely riveted together. The artist was Learchus, said to be a disciple of Dipœnus and Scillis, if not of Dædalus himself. Several statues of this hammer-work, made by Gitiadas, a citizen of Lacedæmon, were extant in the time of Pausanias. An improved method appears to have been subsequently adopted, the statue being formed from lamina, placed one over another, like the weaving of a garment; that is, of plates carved and chased into the forms required. The casting of brass was afterwards discovered, as we have said, by Rhœcus and Theodorus. The latter artist, it appears, likewise cast figures in iron. The discovery of the art of soldering iron is attributed to Glaucus, a native of Chios; and among the works in that metal noticed by Pausanias, are a group of Hercules and the Hydra, by an artist named Tisagoras, and the heads of a lion and a boar, which he saw in Pergamus, dedicated to Bacchus. He also mentions a statue of Epaminondas made of iron.

We now proceed to give a brief account of the ideas of the Greeks concerning the standard of beauty in the different parts of the human body.

With respect to the head, their ideas of beauty were consistent with a noble and dignified expression, as may be observed in what we call a Grecian style of countenance at the present day. The profile of such a countenance consists of a line almost straight, or marked by such slight inflections as are scarcely to be distinguished from a straight line. The forehead and nose, in the case of young persons, form a line very nearly approaching the perpendicular.

The ideas of the Greeks respecting the forehead were very different from ours. Ancient artists and writers inform us that they reckoned a small forehead a mark of beauty, and a high forehead nothing less than deformity. To preserve the oval form of the face, it was customary to represent the forehead as partially hidden by the hair, which made a curve about the temples, and thus prevented the angular appearance of the upper part of the face, which would result from too great an exposure of the forehead. From similar ideas respecting beauty, the Circassians wore their hair hanging down over their foreheads almost to the eyebrows. As to the eyes, their form was deemed of more importance than their size, though large eyes were generally considered beautiful. In sculpture the eyes were always sunk deeper in the head than is natural, because by deepening the cavity the statuary increases the light and shade, and gains expression. In the statues of the different deities, the eye forms a very characteristic feature. The eyes of Apollo, Jupiter, and Juno are large and round. Those of Pallas are also large, but shaded and softened by the lowering of the eyelids. In the Venus de Medicis we have an example that large eyes are not essential to beauty. In this inimitable statue, the eyes are small, with the lower eyelid raised a little, and imparting an air of peculiar sweetness. The beauty of the eyebrows consists in the sharpness of the bones, and the fineness of the hair. The masters of the art considered the joining of the eyebrows a deformity, though it is sometimes found in ancient statues.

Much of the expression of the face depends upon the form of the mouth; much more, in fact, than can be imagined by a person who has not attempted the delineation of the human features. In beautiful statues, the lower lip is always fuller than the upper, in order to give an elegant rounding to the chin. The teeth were very seldom allowed to appear. The Grecian artists never admitted a dimple, except to distinguish individuals, for they considered it by no means beautiful.

Remarkable was the care and attention bestowed by the ancients on the execution of the ears. In their portraits they were as careful to secure an exact likeness of the ear, as of any of those features on which it is customary to lavish the principal share of attention. The careful finish of the ear is frequently sufficient of itself to distinguish an ancient statue from one of later times. Another distinguishing mark of antiquity is afforded by the manner in which the hair was formed. On hard and coarse stones the hair was short, and appeared as if it had been combed with a wide comb; in marble statues it was curled and flowing. In female heads, the locks were thrown back, and loosely tied behind in a waving manner; in very young persons the hair fell naturally over the shoulders.

The most perfect necks of youths, in ancient sculpture, are nearly circular, like a portion of a column. The commencement of the arms as they are affixed to the body has a bold and rounded form, and the whole of the limb, from its

* For an interesting notice of the *Ivory Statues of the Ancients*, see *Saturday Magazine*, Vol. XVI., p. 61.

union to the trunk down to the wrist, is a diminishing cylinder. The hands of young persons were moderately plump, with little cavities or dimples at the joints of the fingers. The male hand and finger had more breadth and flatness, and the knuckles were more square and decided even in youth. The female hand was more rounded and fleshy, and the fingers more decidedly tapering and cylindrical than those of the male. The terminating joint was not bent as it appears in modern statues. The nails in men are more squared, and in women more rounded, long, and delicate. The ravages of time have indeed deprived a great number of the ancient statues of hands and feet, but from those which remain it is evident that the artists of those times were anxious to reach perfection in these as well as in the more conspicuous parts of their work. As the ancients did not cover the feet as we do, they studied them with much attention, and gave to them the most beautiful turning. Winkelman remarks that it is very rare to meet with beautiful knees in young persons, or even in the elegant representations of art. He states that the best-turned knees and most beautiful legs are preserved in the Apollo Sauroctones in the Villa Borghese; in the Apollo which has a swan at its feet; and in the Bacchus of the Villa Medicis. The breasts, in statues of men, were broad and elevated; in women, consisting of a gentle elevation only. The female figure is generally one-tenth shorter than the male; the bones are more straight, and less rugged towards the joints; the forms of the body and limbs are more rounded. The shoulders of the female are narrower in proportion than those of the male; the loins are narrower, and the hips broader. In infancy the proportions are of course extremely different, and there is a general roundness of limbs and body, little distinguished by the marking of bone at the joints, or projecting muscle between the joints.

It seldom or never happens that equal perfection is found in every part of the same individual; hence, it becomes necessary that the sculptor should select the most beautiful parts from different models; and that with such judgment and care, that all these detached beauties may form a complete and symmetrical whole.

The Greek sculptors were very skilful in the disposition of the drapery in their figures, which was always so arranged as to heighten the general effect. The description of the vestments of the Greeks as given by Flaxman may be stated in an abridged form, that we may the better understand the draperies we find on antique statues. The largest and coarsest woollen garment worn by the men was the *pallium*, a large piece of cloth, square or nearly so, and seven feet in length, though considerably less in width. This was generally worn by being folded over, perhaps one-third of the breadth, one end applied to the left side of the body, carried under the right arm, and thrown over the left shoulder in front; it formed broad and simple masses before and behind, with a few bold and distinct folds, which left the body and limbs well accounted for beneath. It was, according to the convenience of the wearer, thrown in a variety of different manners: sometimes one arm was wrapped in it, sometimes the other, and sometimes nearly both: all the statues of philosophers, except the Cynics, are clothed in this manner. There were other garments much resembling the pallium; particularly the manly *peplus*, the chief difference in which was the finer texture of the material, and the more numerous folds into which it consequently fell. The corners of this garment were sometimes ornamented with tassels, or knots.

Of a still finer and lighter description was the *chlæna*, a garment of smaller size than the peplus, but still in the shape of a long square. This garment is particularly appropriate to youthful heroes. The *tunic*, or *kiton*, was an under garment also worn by men in early times; this had no sleeves, and hung over the left shoulder, leaving the right shoulder entirely bare, not to impede action; in after times it had short sleeves, was full in the body, and when not girded hung down below the mid-leg; but, when collected by the girdle, did not reach lower than the knees. This seems to have been made in general of the same material with the chlæna. The *chlamys* is a military and hunting cloak, fastened with a button on the right shoulder, as that worn by the Apollo Belvidere.

The dress of the Greek women was not materially different from that of the men. The tunic was generally made to pass over each shoulder, except in the case of Amazons, or female warriors, who sometimes had the right shoulder left bare; the tunic of females reached to the feet, and was lower than the ankles, even when girded with a zone. It was made of a finer material than that worn by men, and produced long and variegated folds without lessening the distinct appearance of the figure underneath. The *peplus*, or long veil, is described as a dignified garment by Homer; it was worn in the same manner by women as by men, and is a characteristic of dignity, as Juno, Minerva, Vesta, and Ceres, are seldom or never seen without it in a placid state. Besides the tunic or kiton, the dignified Greek females had another garment called the *peplo-kiton*, which appears to have been one piece of cloth doubled over at the top, folded round the left side, the left arm having passed through the top. It was open on the right side, which presented two cascades of folds. This garment is very commonly represented on Greek vases. Many other garments were worn by women, and answered in some measure to those in use at the present time, but they are of less consequence to notice than the vestments above described.

It remains to notice the Roman toga, so entirely appropriated by the Romans, that they are thence called *gens togatæ*. Collected in its folds it appears to have been of an oval figure, through the opening of which, the head, the right arm, and half the body on the right side passed, the garment resting on the left shoulder, being supported by the left hand, falling below the middle of the right leg, and presenting almost innumerable curvilinear folds, which encircle the figure before and behind from the left shoulder downwards. A lap of this garment was brought from behind over the left shoulder, tucked into the upper part in front under the right breast, which fold was called the *cinctus Gabinus*, and was said to be a fashion brought from the city of Gabia. It was worn by emperors, consuls, noblemen, and Roman citizens; in general, it was made of a fine woollen cloth, as most of the Roman garments were.

"In reflecting on the beauty of drapery," says Flaxman, "we must always refer to the beauty of the human figure, which it covers; and as garments are worn as a defence against the weather, or from motives of modesty, they should never be such an incumbrance as to impede action or overload figure, either by their quantity, or mode of wearing; which rule being observed, the general idea of form and action will always be intelligible underneath; and thus, however the figure may be covered, the plainer parts of the garment will give a breadth of light and shadow to the mass, and its folds a beautiful variety of form, either in harmony with, or in opposition to, the form of the limbs and body. The cascade, or zig-zag fold of a long full garment hanging from the shoulder towards the feet, by the irregular geometrical effects of its light and shadow, shade the undulations of living forms on the opposite side of the figure, whether covered with drapery or not, with an advantageous variety.

"The fine and web-like draperies, such as that of the Flora Farnese, show all the forms of the body and limbs, with nearly the same distinctness as if they had remained uncovered, at the same time that the gentle radiated curvilinear folds, upon a near examination, contrast the beautiful forms of the body by variation of lines tenderly assimilated with the flesh, in such a manner as induces the spectator to believe that the least motion of the body will produce a different, and equally pleasing new arrangement of the drapery."

Grecian sculpture in general, may be distinguished as appertaining to the ancient style, the grand style, or the graceful style. The most authentic records of the ancient style are medals containing an inscription, which leads us back to very distant times. The writing is from right to left, in the Hebrew, and this alone is sufficient to prove their antiquity, since the practice was abandoned in the time of Herodotus. The statue of Agamemnon, at Elis, which was made by Ornatas, has an inscription from right to left. This artist flourished fifty years before the time of Phidias. In the primitive schools of sculpture, from the time of Dædalus to that of some of the more immediate predecessors of Phidias, (a period embracing several centuries,) sculpture can scarcely be considered as a regular art. The founders of those schools, with their pupils, were little more than ingenious mechanics, who followed carving among other avocations. Such were Endæus of Athens, celebrated for three statues of Minerva; Æpeus, immortalized as the fabricator of the Trojan horse; Icmulous, spoken of in the Odyssey as having sculptured the throne of Penelope; and many others who kept up the knowledge of sculpture during the heroic ages, though they appear to have made but

little improvement in the art. The schools of Crete, of Samos, and Chios have been already spoken of. The Chian school claims the praise of having first introduced the use of the material to which sculpture is mainly indebted for its perfection, namely, marble. Malas, the father of a race of sculptors, and who is said to have lived about six hundred and forty-nine years before the Christian era, was the first to make the application of this material; and the beautiful marbles of their native island furnished to him and his successors, one rich means of superiority.

The age of Dipœnus and Scyllis, brothers, and of the school of Sicyon, forms an era in the history of ancient art, marking the first decided advances towards the succeeding style. Before their time the style of sculpture had been extremely dry and minute. The designing was energetical, but harsh; it was animated, but without gracefulness; and the violence of the expression deprived the whole figure of beauty. While the limbs and countenance were rude and incorrect in form and expression, the ornamental details were worked with the most elaborate care. This taste for extreme finish arose from the limited resources of the art itself, from the manner of dressing prevalent at that period, and more especially from the mediocrity of artists, leading them to bestow on parts, that application which should have been directed towards the perfecting of the whole.

The fault of fastidiousness and ill-bestowed labour also attaches to the works of the artists we have named, but a great improvement was effected by them, and their names are therefore deservedly recorded as the benefactors of the art in that period. Their execution was much more free, the whole effect more powerful, and the forms better selected and composed. There are at present in the British Museum, colossal heads of Hercules and Apollo, believed to be the work of Dipœnus and Scyllis, which admirably illustrate the style of art at this early period.

Sculpture was now practised throughout a large extent of country, and the school of Magna Græcia, which had long been rising in importance, now began to vie with those of Sicyon, Chios, &c. Five hundred and seventeen years before Christ the fame of all preceding sculptors suffered by the reputation of two Chian brothers, Bupalus and Anthemis, who brought to a high degree of perfection the discovery of their ancestors,—sculpture in marble. Their works were highly valued in succeeding ages, and formed part of the treasures removed to Rome by order of Augustus. The arts flourished at Athens under the government of Pisistratus, and under his protection many esteemed artists employed their skill with advantage to themselves and their country. A corresponding zeal for the arts, and for sculpture in particular, now manifested itself in various parts of Greece. The victory of Marathon, which took place four hundred and ninety years before the Christian era, gave fresh life and energy to the institutions of Greece, and by the artists of this period up to the time of Pericles the grand style was practised, and finally, by the renowned Phidias, brought to perfection. Of the immediate predecessors, or early contemporaries of Phidias, the following are a few of the principal names. Onatas and Glaucias of Ægiha, Critias, Calamis, Pythagoras of Rhegium, Polycletus, Scopas, Alcamenes, and last and greatest of the early school, Myron. From the severe and simple majesty of the grand style a progressive change commenced even in the life-time of Phidias, to one of more studied elegance and softer character. "Sublimity," says Dr. Memes, "is in its own nature a more simple sentiment than beauty, and the sources whence it springs infinitely more limited. If, then, we find the true sublime in Grecian sculpture confined almost to the age and labour of one man, is this to be wondered at, when the same is the case, not only in their poetry, an art far more abundant in resources, but in the poetical literature of every people? The sculptors, then, who followed the era of Pericles to the death of Alexander, can be called inferior to Phidias, only in the same sense as the poets who succeeded will be termed inferior to Homer. In both instances, the change was but the application of principles, which in their essence could not vary, the subjects requiring a modification of certain distinguishing qualities.

The third style of Grecian sculpture was the graceful or beautiful. It was introduced by Praxiteles and Lysyppus. They designed to please rather than to astonish by their performances, and to raise admiration by giving delight. Praxiteles was a native of Magna Græcia, born about three hundred and sixty-four years before Christ. "Finding the highest sublimities in the more masculine graces of the art already reached, perceiving also that the taste of this age tended thitherwards, he resolved to woo exclusively the milder and gentler beauties of style. In this pursuit he attained eminent success. None ever more happily succeeded in uniting softness with force,—elegance and refinement with simplicity and purity: his grace never degenerates into the affected, nor his delicacy into the artificial." Among the known works of this master are his Cupid, Apollo, the Lizard-killer, Satyr, and Bacchus with a Faun. The celebrated Venus of Gnidos was his work.

Lysippus, a Sicyonian, contemporary and rival of Praxiteles, is said to have wrought only in metal. This sculptor was born in the lowest walks of life, and was in a great measure self-taught. He was a diligent follower of nature, and seems to have been distinguished by a more masculine character than was common in art at that period. He produced colossal and equestrian statues in bronze, and his Tarentine Jupiter, sixty feet in height, was equal in magnitude to any of the undertakings of preceding sculptors. Alexander showed this artist particular favour, and to Lysippus alone was granted permission to cast the prince's statue. He also executed twenty-one equestrian statues of Alexander's body-guard who fell at the Granicus. Not only was he famous in works that demanded a forceful and vigorous composition, but he also excelled in delicacy of finish, and knowledge of symmetry. So great was the renown of this artist, that even the tyrannical Tiberius was seized with apprehension at an insurrection of the Roman people, caused by the removal of the figure of Lysippus from one of the public baths. On the death of Alexander, a fatal and immediate decline was visible in the fine arts, and the period of that decline extended from the dismemberment of the Macedonian empire to the final reduction of Greece into a Roman province,—a space of nearly two hundred years.

The unrivalled excellence of Greek sculpture is sufficiently attested by the works of ancient art still remaining; some of the most highly famed of these are as follows:—The Apollo Belvidere, justly deemed one of the most admirable works of Grecian art; the Dying Gladiator, greatly valued for its truth and beauty, and its admirable execution; the statues of Venus, Diana, Mercury, and Bacchus, illustrative of the best days of Grecian sculpture; the Faun of the Florence Gallery, restored by Michael Angelo. The ancient groups are perhaps yet more precious monuments of the sublimity, beauty, and heroism of Greece. The Laocoon, animated with the hopeless agony of the father and sons, is the work of Apollodorus, Athenodorus, and Agesander of Rhodes. The groups of Dirce, Hercules, and Antæus, Atreus, Orestes, and Electra, and Ajax supporting Patroclus, are examples of fine form, character, and sentiment. Niobe and her youngest daughter, by Scopas, is esteemed an exquisite specimen of art. The difficult but harmonious composition representing the Wrestlers must not be omitted, nor, for graceful proportion, Cupid and Psyche. The Elgin marbles, belonging as they do to a period when the art had reached its highest excellence, may well be considered a peculiar treasure to the British nation. For further particulars respecting these marbles, we refer our readers to the *Saturday Magazine*, Vol. XVI., p. 217 and 233.

Our frontispiece represents two antique figures illustrative of ancient Grecian art. One is a terminal statue of Pan playing upon a pipe. He is generally represented naked, but the long robe with which he is here clothed, and the diadem which decorates his head, not only evince the custom but likewise show the manner in which the ancients occasionally clothed the statues of their deities.

In this figure "the act of breathing into the instrument is so admirably expressed, that we may almost fancy we hear the sounds of the music; and it is not improbable, that this statue may be a copy of the one which gave rise to the Greek epigram of Arabius. The point of this epigram is, that the artist had animated the figure of Pan, by infusing breath into it."

The other figure is that of Phocion, an Athenian commander, one of the most virtuous characters of antiquity, who lived about 377 B.C.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, Price One Penny, and in Monthly Parts, Price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 584. AUGUST 7TH, 1841. {PRICE ONE PENNY.

STREET SCENE IN CAIRO.

SKETCHES OF CAIRO.

I.

THE desire of an intellectual people to become more intimately acquainted with the various nations of the world is one of the means which Providence has appointed of diffusing the blessings of civilization. Some men feel an ardent desire to visit distant lands,—to study the manners, laws, and customs of their inhabitants,—to examine the natural phenomena and productions with reference to science or to commerce,—and such men willingly expatriate themselves in order to gratify the ruling principle of their minds. But all men feel this principle in a greater or less degree, and the sketches of the artist and of the traveller are received with that respect and attention which show how deeply interested we are in the condition of our fellow-creatures in every part of the habitable globe. Such are the feelings of a people advancing in knowledge. How different is the view of this subject taken by a nation which for many centuries has occupied only a stationary position! the Arab looks with astonishment at the labours of the antiquary among the ancient monuments on the banks of the Nile, and is satisfied that he would not undergo such toil were he not seeking for hidden gold; even the more polished Egyptian regards the traveller either as a spy or as an emissary from his king, and it is difficult to convince him that this is not the case, so strange is the idea of a man's incurring great trouble and expense, for the purpose of acquiring the knowledge of foreign lands.

We feel, however, that the motives of the traveller are pure and disinterested,—his object being either to confer benefits on the people among whom he travels, or to contribute to the advancement of science among ourselves. At no distant period the details of the traveller were received with suspicion, even among ourselves,—his object was supposed to be to astonish and mislead,—and, referring everything to the standard of our own manners and customs, we received with contemptuous incredulity whatever differed greatly from it. This littleness of feeling has gradually given way under the exertions of first-rate men, who have visited and revisited distant climes, and have authenticated and enlarged the accounts already received. The artist and the traveller unite in conveying to us ideas so clear and precise of the different regions of the globe that we may well be content to remain at home, and yet become minutely acquainted with whatever region we desire to be informed of.

Egypt has ever been a land to which the traveller's curiosity has been directed; but while the antiquities, the manners, and customs of its ancient inhabitants have excited so much attention, it has been regretted that the modern tenants of this wonderful land should have been so imperfectly noticed. Through the exertions chiefly of two individuals this cause of regret no longer exists. Since Mr. Lane has published his *Account of the Manners and Customs of the Modern Egyptians*, and Mr. Robert Hay his *Illustrations of Cairo*, we are in possession of details so full, accurate, and minute that, although it would be too much to say that nothing more is left to be desired, yet it is probable that no other people have received a greater share of attention from the artist and the traveller. Mr. Lane resided among them for several years,—adopted their language, dress, manners and national peculiarities. Mr. Hay has furnished a noble volume* of lithographic prints, in the most exquisite style of art, from drawings made on the spot, accompanied with letter-press descriptions; and from these two sources, as also from the small but accurate work of Mr. Kinnear, who visited Egypt in 1839, we propose to furnish a few sketches of Cairo, first offering our best thanks to Mr. Hay for the kind liberality with which he has allowed us to copy his drawings.

GRAND CAIRO, the modern Egyptian metropolis, now called MUSR, was founded by Jawhar, a Moggrebin general, in the middle of the tenth century. He gave his new city the name of AL-KAHIRA, or EL-CKAHIREH, (that is, The Victorious,) whence Europeans have formed the name of Cairo. It is situated at the entrance of the valley of Upper Egypt, midway between the Nile and the eastern mountain-range of Moockuttum. Between it and the river is a tract of land, mostly cultivated, which in the northern parts (where the port of Boolack is situated) is more than a mile wide, and at the southern part less than half a mile. The city occupies a space equal to about three square miles, and is divided into the new and old cities. The old city is on the eastern bank of the Nile, and now almost uninhabited. The new city, which is properly Cairo, is seated in a sandy plain, about two miles and a half from the old city, and on the same side of the river. It is extended along the mountain, near a point of which, at an angle of the town, a castle is built, the city having been removed hither, it is supposed, in order to be under its protection. The city is surrounded by a wall, and the gates are shut at night.

The streets of Cairo are in general narrow and intricate, especially in the Jews' quarter, where some of the passages barely admit of two persons passing each other. The windows, with curiously carved wooden lattices, project so much on either side as nearly to meet over-head, and exclude much of the light, and, although this produces a useful and agreeable shade from the sun, it gives a sombre and dismal appearance to those streets which contain only dwelling-houses. In these streets very few passengers are seen, but in the bazaars and great thoroughfares there is a continual stream of Turks, Copts, Jews, Dervishes, and Bedawees from the Desert, in their picturesque and graceful costumes.

A stranger who merely passed through the streets would regard Cairo as a very close and crowded city, but that it is not so is evident to a person who overlooks the town from the top of a lofty house, or from the minaret of a mosque, from whence may be observed within the walls many vacant places, some of which, during the season of inundation, are lakes. The gardens, burial-grounds, the courts of houses, and the mosques also occupy a considerable area. The great thoroughfares have generally a row of shops along each side. Above the shops are apartments, which do not communicate with them, and which are seldom occupied by the persons who rent the shops. To the right and left of the great thoroughfares are by-streets and quarters. Most of the by-streets have a large wooden gate at each end, closed at night, and kept by a porter within, who opens to any persons requiring to be admitted. The quarters mostly consist of several narrow lanes, having but one general entrance, with a gate, which is also closed at night, but several have a by-street passing through them.

In a country where neither births nor deaths are registered, it is difficult to ascertain with any precision the amount of population. A few years ago a calculation was made founded on the number of houses in Egypt, and the supposition that the inhabitants of each house in the metropolis amount to eight persons, and in the provinces to four. Mr. Lane thinks this computation approximates very nearly to the truth; and, according to it, Cairo contained previous to the plague of 1835 about 240,000 inhabitants. That calamity removed not less than one-third of the amount; but the deficiency was rapidly supplied from the villages. Of the inhabitants of the metropolis, about 190,000 are Egyptian Mooslims; about 10,000 are Copts, or Christian Egyptians;

* *Illustrations of Cairo, by* ROBERT HAY, Esq., *of* Linplum. *Drawn on stone by* J. C. BOURNE, *under the superintendence of* OWEN B. CARTER, Architect. This work is appropriately dedicated to Edward William Lane, Esq., "as a tribute of respect for the zeal and fidelity he has evinced in his literary pursuits connected with that country."

between 3000 and 4000 are Jews; and the remainder are strangers from various parts of the world.

We will speak more particularly of the Mooslims in a future article. The Copts are most probably the descendants of the ancient Egyptians, and differ from the Mooslims in religion; a difference sufficient in a land of religious intoleration to sever every other tie between them. It is difficult for a stranger to perceive any difference between the Coptish countenance and that of the Mooslim, beyond a certain downcast and sullen expression of countenance which generally marks the former. The Copt is distinguished by a black or dark blue turban, or one of a grave drab colour; and the Mooslims themselves often fail to recognize a Copt when they see him in a white turban. The Coptish patriarch, although styled patriarch of Alexandria, has his residence in Cairo, and is said to be very wealthy. He is chosen by lot from among the monks of the convent of St. Anthony. With the exception of a few who adhere to the Greek Church, they are of the sect called Jacobites or Eutychians, from Jacobus Baradæus, the propagator of the Eutychian doctrines.

One of the most remarkable traits in the character of the Copts is their bigotry. They bear a bitter hatred to all other Christians; even exceeding that with which the Mooslims regard the unbelievers in el-Islam. Yet they are considered, by the Mooslims, as much more inclined than any other Christian sect to the Mohammedan faith; and this opinion has not been formed without reason; for vast numbers of them have, from time to time, and not always in consequence of persecution, become proselytes to this religion. They are, generally speaking, of a sullen temper, extremely avaricious, and abominable dissemblers; cringing or domineering according to circumstances.

The Copts are not now despised and degraded by the government as they were a few years ago. Some of them have even been raised to the rank of beys. Before the accession of Mohhammad Alee, neither the Copts nor other Eastern Christians, nor Jews, were generally allowed to ride horses in Egypt; but this restriction has, of late years, been withdrawn. A short time since, the Mooslims of Damascus, who are notorious for their bigotry and intolerance, complained to the conqueror, Ibraheem Basha, of the Christians in their city being allowed to ride horses; urging, that the Mooslims no longer had the privilege of distinguishing themselves from the infidels. The Basha replied, "Let the Mooslims still be exalted above the Christians, if they wish it: let them ride dromedaries in the streets: depend upon it the Christians will not follow their example." The Copts enjoy an immunity for which they are much envied by most of the Mooslims: they are not liable to be taken for military service; as no Mohammedan prince would *honour* a Christian by employing him to fight against a Mooslim enemy.

The Coptic is now a dead language, and is only preserved in the religious books; the Arabic being spoken by the Copts as by the Mooslims, and taught in their schools.

The Jews inhabit the worst quarter of Cairo, a labyrinth of dark narrow lanes, in which it is hardly possible for two persons to pass. In their dress and persons they are generally slovenly and dirty. Many of them have sore eyes and a bloated complexion, occasioned, it is said, by the grossness of their food, in which they use great quantities of oil of sesame. They lead a very quiet life: indeed, they find few but persons of their own sect who will associate with them; for they are held in the utmost contempt and abhorrence by the Mooslims in general, and are said to bear a more inveterate hatred than any other people to the Mooslims and the Mohammedan religion. The more wealthy Jews dress handsomely at home; but put on plain or even shabby clothes before they go out: and, although their houses have a mean and dirty appearance from the outside, many of them contain handsome and well furnished rooms. The condition of the lower orders is very wretched; many of them having no other means of support than the alms of their superiors of the same sect.

The protection afforded by Mohhammad Alee to the Copts and Jews, is one great cause of the unfavourable feeling with which the rigid Mooslims regard the present government. The Christian reader will be delighted to hear that a Protestant mission is established in Cairo, and that the service of the Church of England is performed publicly every Sunday. The boys from the missionary school attend the public service in the chapel; and, it is said, that several of them are children of Mooslim parents, who are induced to send them to the school that they may acquire the English language, which is becoming an important accomplishment. "Indeed, there can be little doubt," says Mr. Kinnear, "that the toleration of the pacha's government has had a considerable effect in relaxing the bigotry of the mass of the population, and is undermining the foundations of Mohhammadinism."

In our frontispiece is represented one of the sebeels, or public reservoirs for the gratuitous supply of water, which the burning climate of Egypt has rendered necessary, and the charity and munificence of the wealthy have supplied. There are about three hundred in the city, and these are annually filled at the time of the inundation.

The Emeer 'Abd er-Rahmán Kyáhhya, a person of great wealth and power, who died in 1199, A.H.* (1766, A.D.), erected this and several other sebeels and charitable buildings. It exhibits a fantastic combination of Turkish and Arabian tastes, but is more unassuming and chaste than many of the sebeels built within the last seventy years; and the window through which the thirsty passenger receives his draught, is ornamented with a handsome bronze grating. Upon the upper part of the building is an open kuttab or school, which generally accompanies the sebeels, and it is situated at the point where two streets branch off.

In the foreground, seated in the public street, before the shop of an 'Attar or druggist, upon the floor of which is seen a nargeeleh for smoking, is represented a servant in the act of pounding some substance in a wooden mortar. A female of the lower order is advancing, veiled by the dark boorko; and another, a mendicant, is asking alms with her face uncovered,—a common circumstance amongst that class.

Beyn el-Kasreyn, that is, the Street between the two Palaces, was, a few years ago, an interesting spot for the antiquarian, from the fact of some remains existing of those buildings.

* The Mohammedans reckon from the "Hegira" or *Flight* of their Prophet.

Man, indeed, may be called a bee, in a figurative style. In search of sweets, he roams in various regions, and ransacks every inviting flower. Whatever displays a beautiful appearance, solicits his notice, and conciliates his favour, if not his affection. He is often deceived by the vivid colour and attractive form, which, instead of supplying honey, produce the rankest poison; but he perseveres in his researches, and if he is often disappointed, he is also often successful. The misfortune is, that when he has found honey, he enters upon the feast with an appetite so voracious, that he usually destroys his own delight by excess and satiety. —Knox.

Among all the graces that adorn a Christian soul, like so many jewels of various colours and lustres, against the day of her espousals to the Lamb of God, there is not one more brilliant than patience.—Bishop Horne.

In the least,
As well as in the greatest of his works,
Is ever manifest a present God:
As well in swarms of glittering insects, seen
Quick to and fro, within a foot of air,
Dancing a merry hour, then seen no more,
As in the systems of resplendent worlds,
Through time revolving in unbounded space.

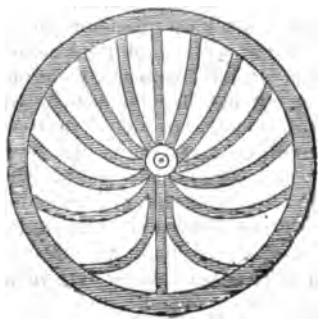
Carlos Wilcox.

OPTICAL ILLUSIONS. IV.

WE resume our notice of some curious optical phenomena, in which objects appear to the eye under circumstances singularly deceptive. We gave several instances of this kind in the former papers, and shall now add to the number.

Dr. Roget, in a paper communicated to the Royal Society, a few years ago, described a curious optical deception which takes place when a carriage-wheel, rolling along the ground, is viewed through the intervals of a series of vertical bars, such as those of a palisade, or of a Venetian window-blind. Under such circumstances, the spokes of the wheel, instead of appearing straight, as they would naturally do if no bars intervened, seem to have a considerable degree of curvature. The distinctness of this appearance is influenced by several circumstances; but when everything concurs to favour it, Dr. Roget states the illusion as being irresistible, and, from the difficulty of detecting its real cause, exceedingly striking.

The degree of curvature in each spoke varies, according to the situation it occupies for the moment with respect to a perpendicular line. The two spokes which arrive at a vertical position, above and below the axle, are seen of their natural shape, that is, without any curvature. Those on each side of the upper one appear slightly curved; those more remote, still more so; and the curvature of the spokes increases as the eye follows them *downwards* on each side, till we arrive at the lowest spoke, which, like the first, again appears straight. The most remarkable circumstance relating to this visual deception is, that the convexity of these curved images of the spokes is always turned downwards, on both sides of the wheel; and that this direction of their curvature is precisely the same whether the wheel be moving to the right or to the left of the spectator. The annexed cut will illustrate the appearance here alluded to.



Dr. Roget then instituted a series of experiments, for the purpose of arriving at results which might furnish a probable cause for the phenomenon; and he places his results under six different heads.

1. A certain degree of the velocity in the wheel is necessary to produce the deception above described. If this velocity be gradually communicated, the appearance of curvature is first perceptible in the spokes which have a horizontal position; and as soon as this is observed, a small increase given to the velocity of the wheel, produces *suddenly* the appearance of curvature in all the lateral spokes. The degree of curvature remains precisely as at first, whatever greater velocity be given to the wheel, provided it be not so great as to prevent the eye from following the spokes distinctly as they revolve; for it is evident that the rapidity of revolution may be such as to render the spokes invisible. It is also to be noticed that, however rapidly the wheel revolves, each individual spoke appears, during the moment it is viewed, to be at rest.

2. The number of spokes in the wheel makes no difference in the degree of curvature they exhibit.

3. The appearance of curvature is more perfectly seen when the intervals between the bars, through which the wheel is viewed, are narrow; provided they are sufficiently wide to allow of the distinct view of all the parts of the wheel in succession, as it passes along. For the same reason the phenomenon is seen to the greatest advantage when the bars are of a dark colour, or shaded, and when a strong light is thrown upon the wheel. The deception is, in like manner, aided by every circumstance which tends to abstract the attention from the bars, and to fix it upon the wheel.

4. If the numbers of bars be increased in the same given space, no other difference will result than a greater multiplication of the curved images of the spokes; but if a certain relation be preserved between the angles subtended at the eye by the whole intervals of the bars, and of the extremities of the spokes, this multiplication of images may be corrected. The distance of the wheel from the bars is of no consequence, unless the latter are very near the eye, as in that case the apertures between them may allow too large a portion of the wheel to be seen at once.

5. If the bars, instead of being vertical, are inclined to the horizon, the same general appearances result; but with this difference, that the spokes occupying positions parallel to the bars, are those which have no apparent curvature; while the curvatures of the other spokes bear the same relation to these straight spokes, and to each other, that they did in the former case. When the inclination of the bars is considerable, the images become more crowded, and the distinctness of the appearance is thereby diminished. The deception totally ceases when the wheel is viewed through bars that are parallel to the line of its motion.

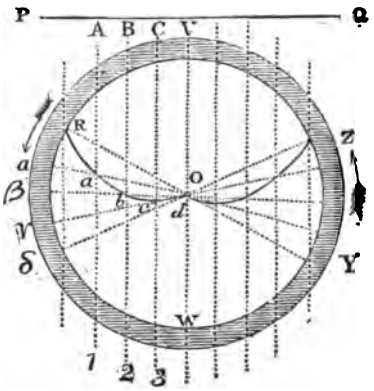
6. It is essential to the production of this effect that a combination should take place of a progressive with a rotatory motion. Thus, it will not take place if, when the bars are stationary, the wheel simply revolves on its axis, without at the same time advancing; nor when it simply moves horizontally, without revolving. On the other hand, if a progressive motion be given to the bars, while the wheel revolves round a fixed axis, the spokes immediately assume a curved appearance. The same effect will also result if the revolving wheel be viewed through fixed bars by a spectator, who is himself moving either to the right or left; because such a movement on the part of the spectator produces in his field of vision an alteration in the relative situation of the bars and wheel.

Having, in the true spirit of an experimentalist, thus investigated the consequences that would follow certain changes in the arrangement of the moving object, with a view to determine the relative importance of each, Dr. Roget proceeds to explain the principle on which the phenomenon rests. In his mode of so doing, we see the advantage of thus searching the experiment through various forms and stages; for a writer, in a scientific journal three or four years before, while describing a similar phenomenon, stated that the curvature of the spokes is produced just the same, whether a wheel be running along a plane as it revolves, as in the case of a carriage driven through the street, and viewed through the ordinary iron railing, or whether, as in a fly-wheel seen through a similar railing, it merely revolves in its own axis. Dr. Roget, however, shows both from theory and experiment, that there must be a combination of a progressive with a rotatory motion. It matters not, for the production of the phenomenon, whether the wheel or the system of bars progress, provided one or other does so.

Dr. Roget clearly shows, that the true principle on which this apparent curvature of the spokes depends, is the same as that to which is referable the illusion that occurs when a bright object is wheeled rapidly round in a circle, giving rise to the appearance of a line of light throughout the whole circumference; namely, that an impression made by a pencil of rays on the retina, if sufficiently

vivid, will remain for a certain time after the cause has ceased. To illustrate the production of the curves by a diagrain would involve considerable intricacy of detail; but Dr. Roget justly observes, that the principle may be well shown, and with comparative simplicity, by supposing that the wheel has only one spoke or radius instead of several, that it revolves in a stationary axis without progressing, and that one single aperture, instead of a system of bars, progresses from one side to the other.

In the annexed cut, the wheel, provided with one spoke



or radius O R, in revolving is the direction of the arrows, and is supposed to be seen through a single narrow aperture or crevice, moving horizontally in a given direction P Q. To simplify the case further, we will suppose that the progressive motion of the aperture is just equal to the rotatory motion of the circumference of the wheel. Such being the circumstances of the experiment, it will not be difficult to understand, that if, at the time of the transit of the aperture, the radius should happen to occupy either of the vertical positions V O or O W, the whole of it would be seen at once through the aperture, in its natural position. But if it should happen to be in an oblique position R O, terminating at any point of the circumference, at the moment the aperture has, in its progress horizontally, also arrived at the same point R, the extremity of the radius will now first come into view, while all the remaining part of it is hidden. By continuing to trace the parts of the radius that are successively seen by the combined motions of the aperture and of the radius, we shall find that they occupy a curve R *a b c d*, generated by the continued intersection of these two lines. Thus, when the aperture has moved to A, the radius will be in the position O *a*; when the former is at B, the latter will be O *β*, and so on.

If, pursuing the same mode of inquiry, we suppose, that when the aperture is just passing the centre, the radius is found in a certain position on the other side O Y, and rising towards the summit, then, by tracing as before the intersections of these lines in their progress, we shall obtain a curve precisely similar to the former. Its position will be reversed; but its convexity will still be downwards. If the impressions made by these limited portions of the spoke follow one another with sufficient rapidity, they will, as in the case of the luminous circle already alluded to, leave in the eye the trace of a continuous curve line; and the spoke will appear to be curved, instead of straight.

By applying a similar train of reasoning to the phenomenon which gave rise to these investigations, Dr. Roget satisfactorily shows that the cause may be arrived at. Since the curved appearance of the lines results from the combination of a rotatory with a progressive motion of the spokes, in relation to the apertures through which they are viewed, it seems pretty evident that the same phenomenon must be produced if the bars be at rest, and both kinds of motion be united in the wheel itself; for, whether the bars move horizontally with respect to the wheel, or the wheel with respect to the bars, the relative motion between them, and its effects to the eye placed behind the aperture, must be the same. The attention of the spectator should in both cases be wholly directed to the wheel, so that the motions in question should be referred altogether to it.

Dr. Roget investigates the mathematical nature of the curves, into which the spokes are apparently thrown; but such an investigation is unsuited for our pages.

LABYRINTHS.

THIS curious class of buildings seems to have been used in ancient times for the purposes of imprisonment and devotion. A labyrinth is an architectural, or other kind of construction, whose numerous passages and perplexing windings render the escape from it difficult and almost impossible. It was composed of, or filled with chambers and galleries, one running into the other; so that, without a clue or guide, a stranger could not pass through it. These edifices were not built for the purpose of making people lose their way: this was merely an accidental peculiarity, on account of which every confused mass of things, difficult to be disentangled, has been called a *labyrinth* or *maze*.

The construction of labyrinths in modern times has been chiefly for the purposes of amusement. With this view they are often formed with quickset hedges, as in the Sidney Gardens at Bath. The ancients had four labyrinths which were very celebrated:—one in Egypt, another in Crete, a third in Lemnos, and a fourth in Italy: these, therefore, we shall do well to notice in order.

The Egyptian labyrinth, the most celebrated of all, was situated in Central Egypt, above Lake Mœris, not far from Crocodilopolis, in the country now called *Fayoom*. It was built about 650 years B.C. by twelve kings, who reigned at one time in Egypt; and it was probably intended for the place of their burial, and to commemorate the actions of their reign. The beauty and the art of the building were, according to Herodotus who saw it, almost beyond belief,—superior to the pyramids. The edifice contained twelve courts enclosed with walls, with as many doors opposite; six opening to the north, and six to the south, contiguous to one another; the same exterior wall extending round them. There were 3000 chambers; half in the upper part of the building above ground, and the other half below ground. The chambers above were seen by Herodotus, and astonished him beyond conception; but he was not permitted to see those below, where were buried the holy crocodiles, and the monarchs whose munificence had raised the edifice. The roofs and walls were encrusted with marble, and adorned with sculptured figures. The courts or halls were surrounded with stately and polished pillars of white stone; and according to some authors, the opening of the doors was artfully accompanied with a terrible noise, like peals of thunder.

The arrangement of the chambers of the Egyptian labyrinth seems to have been symbolic of the zodiac and the solar system. They excelled, in splendour and art, all human works. At present, only 150 rooms are reported to be accessible: the others are dark and choked with rubbish. The ancient labyrinth is supposed to be identical with the ruins of Casr Caroun.

In the midst of these ruins a large edifice rises up, of which there are several halls remaining, filled with trunks of columns. A portico, half demolished, encompasses it. Staircases may be distinguished, by which they mounted to different apartments: and others, by which they descended into subterraneous passages. But what particularly attracts attention, is the view of several low, narrow, and very long cells, which seem to have had no other destination, than to contain the bodies of the sacred crocodiles, brought hither from Crocodilo-

polis, or the City of Crocodiles, a town of Egypt near the Nile, above Memphis. The crocodiles were held there in the greatest veneration; and they were so tame that they came to feed from the hands of their feeders. This city was afterwards called Arsinöe. The crocodiles were embalmed before being consigned to the subterraneous cells of the labyrinth.

These ruins, placed on the western side of the Nile, at a league's distance from Birket Caroun, formerly Lake Mœris, can only correspond with the labyrinth; for ancient authors assigned it this position, and point out no town on that side. Strabo, Ptolemy, and Herodotus, all agree in placing the labyrinth beyond the city of Arsinöe, on the western side, and on the banks of the Lake Mœris. This is exactly the situation where we meet with the ruins described by Savary. Modern travellers are all of them still astonished at these noble and magnificent ruins.

The labyrinth of Crete was the most celebrated and classic of these mazes. It belonged to the ancient town of Gnossus, which was situated on the north of the island of Crete, now called *Candia*, and west of the present city of Spinalonga. This building was constructed by Dædalus, an Athenian, for Minos, who was King of Crete, about fourteen centuries before the Christian era. It was built upon exactly the same plan as the Egyptian labyrinth; but it was by no means so large. We are told that, by the unanimous testimony of the Cretans, this labyrinth, with its many and varied spiral-formed windings, was designed as a prison, for the secure and close confinement of malefactors; and likewise, that Dædalus, its architect, having incurred the displeasure of Minos, was almost its first inmate.

Now there still exists a subterraneous maze in the island of Candia, the ancient Crete, near the ruins of Gortyna, and somewhat to the south of Gnossus, whereabouts is now the town of Spinalonga. At about an hour's march from the plain of Gortyna is the mouth of this labyrinth or quarry, which is about seven or eight paces broad at its entrance, but so low that a man cannot pass it without stooping: on advancing a little way the passage widens, though even here it is often obstructed with large stones lying here and there, and also by the surface being extremely rough and uneven. The roof is flat, for it is cut in the rock above, and formed of beds of stone, lying horizontally one upon another; proceeding onwards through a sloping cavern, a great number of turnings and windings is met with, so irregular and intricate, that should a traveller, without a ball of thread or some other contrivance, strike into one of them out of the main path or alley, he would be in great danger of being bewildered and lost;—for few persons have been bold enough to explore all its mazes, so that visitors in general keep along the principal path, and seldom deviate either to the right or to the left; and, even in this case, to guard against all possible accidents, they take such precautions as scattering straw on the ground, or sticking up pieces of paper at every turning; for the eternal gloom and obscurity can scarcely be penetrated by the torches, with which every traveller is furnished, and whose faint light only seems to add to the awful gloom and perplexity.

On the left there are several vaults without any outlet, and the proper and direct road lies on the right of the entrance, where, after ascending by a narrow path, the traveller is compelled to creep upon his hands and knees for about a hundred paces, on account of the lowness of the roof. Having reached the end of this dwarfish defile, the ceiling suddenly rises to a considerable elevation, and the visitor finds himself upon his feet again. The vaulted galleries through which he now proceeds are seldom less than seven feet in height, and from six to ten in width, having a countless variety of avenues, opening on each side, and crossing each other in different directions. These roads are all cut with a chisel in the rock, the layers of which are disposed in a horizontal plane, and are of a grayish colour. In some places enormous masses of stone, half torn from the roof, seem ready to fall upon the head of the adventurous passenger, while he, in danger of being crushed, must stoop low, in order to pass beneath them. Earthquakes, from which this island has often suffered, have doubtless occasioned these fractures in the rock.

The traveller has often, after advancing a considerable distance in one division, to retrace his steps, on account of no opening being in that direction. Sometimes, after long windings, he is surprised to find himself at the very place from which he had last set out. To enumerate or describe all the complication or intricacy of the circuitous avenues cut in this stupendous excavation would be almost beyond the power of language. Seeing them is the only method of obtaining an accurate knowledge, and of thoroughly appreciating these gigantic wonders. Some of these galleries form curves, leading imperceptibly to a wide space, the roof of which is supported by large pillars, and here three or four roads meet, running in opposite directions, while others extend in a spiral form for a considerable way, and in several ramifications are carried to a great length, and being then terminated by the rock, put a stop to the traveller's progress.

The distance from the mouth to the end of the cavern is more than a mile: here the walk divides itself into two or three branches, and terminates in two large halls, from twenty to thirty feet square. In passing along one of this infinite number of winding paths, a very fine grotto is discovered, the roof of which is elevated in the form of a dome, all of which appears formed by the hand of nature. It however possesses no stalactites, nor are any such crystal curiosities met with in any part of this underground wilderness, for the cavern is completely dry, and no water is seen trickling through the rock, as is usual in such places; but, as there is no vent or admission for fresh air, the consequence is that a most disagreeable smell or effluvium is constantly floating in the atmosphere of these vaulted tomb-like paths, and the thousands of bats,—the only occupants of these dark recesses,—do not conduce a little to the foul and disgusting scent with which the noses of travellers are assailed in their progress. There is a most peculiar property connected with the stone of this quarry, for it is a surprising, but yet authenticated fact, that any letters or figures inscribed or engraved on the plain surface of the rock will, in the course of time, swell above the face of the stone, and be no longer hollow, but projecting or embossed characters, and the matter produced by this filling up is always found to be whiter than the rest of the rock.

In wandering through such an horrific and sombre place as this, the imagination conjures up a host of frightful or fantastic images;—it fancies steep precipices and yawning chasms about to ensnare the feet of the curious observer,—hideous monsters ready to spring upon him at every turn,—in a word, a thousand chimeras, which have no existence except in romances and fables; and when a traveller thinks of himself as being there alone, without either thread or torch, he feels a thrilling horror come over him, a torpor seizes his mind, and his faculties seem to forsake him: his very soul is filled with terror. Every thing around convinces him, that, if placed in such an awful situation, all hope would be extinguished in his bosom, and nothing would be left but to meet death with fortitude and resignation.

Some writers imagine that the maze at Gortyna was nothing but a quarry, out of which were dug the materials for building the ancient towns of Gnossus and Gortyna; but others decidedly oppose this opinion, stating that the stone is too soft for the purposes of architecture; that the way from the cavern is almost impassable, especially for vehicles heavily laden; and that, had the way

been good, the entrance to the cavern would have been larger; and that, as it is, all stones brought from the interior must have been first broken into small pieces, which would have greatly and unnecessarily increased both the labour and the expense. We come, therefore, to the most probable conjecture,—which is, that it was, at first, an enormous cave; that nature had drawn the plan and formed the outlines; that Dædalus enlarged several of the passages, and cut out many new ones; and that various other persons have had the curiosity to extend it, by widening the avenues and taking down large strata of stone to heighten the roof.

Lemnos, now called *Stalimene*, is situated in the northern part of the Archipelago, formerly called the *Ægean Sea*. The labyrinth constructed on this island is said to have surpassed the others in splendour and magnificence. It was supported by forty columns of uncommon height and thickness, and equally admirable for their beauty and grandeur.

The labyrinth at Clusium in Tuscany was erected by Porsenna, the king of that place, about B.C. 530. It was probably intended to be his own sepulchre. It was a square building of stone, fifty feet in height, and thirty on each side. At each corner stood a pyramid, and also one in the centre, each one hundred and fifty feet high, and at the base seventy-five feet wide. We have no further particulars to offer our readers respecting the Lemnian and Clusian labyrinths.

Blame not the fates, nor call their lot unkind,
Whose wants are many, and whose joys confined;
For Heaven's best gifts are equal showered around,
As vernal dews that bathe the thirsty ground.
On the unjust and just the rain doth fall,
The sun's bright glories shine alike on all;
The ambient air alike its current blows
On rich and poor, on brothers and on foes;
And love—the last best gift of bounteous Heaven—
Alike to all the tribes of Earth is given.

The late Lady Northampton.

Good manners consist in a constant maintenance of self-respect, accompanied by attention and deference to others; in correct language, gentle tones of voice, ease, and quietness in movements and action. They repress no gaiety or animation which keeps free of offence; they divest seriousness of an air of severity or pride. In conversation, good manners restrain the vehemence of personal or party feelings, and promote that versatility which enables people to converse readily with strangers, and take a passing interest in any subject that may be addressed to them.—*Woman's Rights and Duties.*

He who best understands himself is least likely to be deceived by others: you judge of others by yourselves, and therefore measure them by an erroneous standard, whenever your autometry is false.—Southey.

By reading we enjoy the dead, by conversation the living, and by contemplation ourselves.

Solitude sometimes is best society.

Fuller says, that if God has no need of human learning, still less has He of human ignorance.

The firm endurance of suffering by the martyrs of conscience, if it be rightly contemplated, is the most consolatory spectacle in the clouded life of man; far more ennobling and sublime than the outward victories of virtue, which must be partly won by weapons not her own, and are often the lot of her foulest foes. Magnanimity in enduring pain for the sake of conscience, is not indeed an unerring mark of rectitude, but it is of all destinies that which most exalts the sect or party whom it visits, and bestows on their story an undying command over the hearts of their fellow-men.—Sir James Mackintosh.

BEET-ROOT SUGAR

III. The Introduction of the Manufacture into France.

In the second paper on this subject we gave an outline of the methods in which Achard and Gottling produced sugar from beet-root, towards the latter end of the last century. We now proceed to consider the course taken by the French government in relation to this matter.

We alluded in the first article to the desire of Bonaparte that France should be quite independent of England in obtaining a supply of the necessaries of life. But there was another motive which turned the direction of the French people to this subject, viz., the enormously high price which cane-sugar had attained, and which was at one time six francs the kilogramme (about two shillings and three pence per pound). Attention was, in the first place, directed to the cultivation of the sugar-cane itself in Provence, but this utterly failed. Then fruits and stems of various kinds were tried, to ascertain whether sugar could be obtained therefrom, but these attempts likewise failed. M. Deyeux was then ordered to prepare a report to the Institute of the experiments made by the Prussian chemist, Achard, detailed in our last paper; and the report given in by Deyeux was very favourable to the cultivation of the beet for the sake of producing sugar. The experiments of Achard, however, being received with some degree of distrust, he immediately offered to repeat them before persons worthy of confidence, and to publish the results in a memoir. The opinion of scientific men became then more favourable to the project, and he established one or two manufactories for beet sugar. These attempts, probably from the inefficient scale in which new projects are almost necessarily conducted, failed in producing any striking results. The plan fell into disrepute for a time, and a new project was entered on, viz., that of producing sugar from raisins. The government sought to encourage this experiment, by offering rewards to those who should be most successful in them. By a decree of the 18th of June, 1810, a sum of one hundred thousand francs, and the cross of the Legion of Honour, were given to M. Proust, and another sum of forty thousand francs was awarded to M. Fouquet, for their exertions in this matter. But the success of these attempts was not such as to lead to permanent results, and they were abandoned.

The motives which had led to the institution of these experiments still continuing, Bonaparte resolved to resume, on a larger scale, the experiment with the beet-root. On the 15th of January, 1812, a decree appeared establishing five chemical schools, for the fabrication of sugar from beet-root; situated respectively at Paris, Wachenhem, Douai, Strasburg, and Castelnaudary. A hundred pupils were attached to these schools, each of whom, after three months' study, and a strict examination, was to receive a thousand francs. The Minister of the Interior was empowered to plant one hundred thousand *arpents* (nearly equivalent to English acres) of land in France with beet-root; and four years' exemption from taxes were promised to cultivators. Five large manufactories were to be established, for the preparation of sugar from the root; and their mode of arrangement was such that the production of about five million pounds of sugar per annum was calculated on. What the success of these measures might have been, we do not know, for the disastrous Russian campaign, which soon followed, had the effect of opening the ports of France to sugar produced by foreign countries. At that early stage, the beet-sugar production could not stand without government protection; and this protection being withdrawn, the whole machinery fell to the ground, and for ten years very little was done in the matter.

At length, in the year 1822, several manufactories

were established, but for the most part under unfavourable circumstances; for the speculators seldom united the knowledge and experience of the manufacturer with that of the agriculturist. The want of this union of talent operated so disastrously, that one half of the manufactories were abandoned by the year 1829. This latter year, however, formed a point of time from which this great experiment—for such it undoubtedly is—assumed a more favourable appearance. The slow mode of crystallization until then adopted, was abandoned for one more expeditious; and many improvements were from time to time brought to bear, either upon the cultivation of the root itself, or upon the preparation of sugar from the juice thence extracted. Notwithstanding a tax which was laid upon beet-root sugar, the spread of the manufacture was so rapid, that by the year 1838 there were five hundred and fifty establishments in France, which produced sixty million kilogrammes (about a hundred and thirty million pounds, of beet-root sugar.

In considering the relative advantages likely to result from the use of beet and from cane-sugar, Chaptal, after an experience of twelve years, came to these two conclusions:—that the juice extracted from the beet does not differ from that yielded by the sugar-cane, either in colour, taste, specific gravity, or crystallization; and that the cultivation of beet for the sake of obtaining sugar, may advantageously proceed concurrently with that of the sugar-cane, when the price of cane-sugar is as high as one franc twenty centimes the demi-kilogramme, that is, that when the price of cane-sugar obtained from the French colonies is as high as thirteen-pence per pound, the beet-sugar may be prepared with a profit. These facts being stated and admitted, Chaptal proceeds to consider how far the culture of the beet may be favourable to France generally. He states that the culture of the beet does not prevent the growth of a single ear of corn, because the beet forms an intermediate crop, immediately after the gathering of which, corn may be sown. Moreover, the crop of corn grown in a soil previously planted with beet is said by him to be better than in any other soil; because the soil has been loosened by the beet-roots, and cleared by the weeding which the beet crop has undergone. A farther advantage is, that the preparation of the beet takes place principally in winter, and furnishes work to horses and farm-servants, who are often unemployed at that season. The food for cattle is also provided by the same means as the beet is produced; for the part of the plant which grows above ground, and which is not used in the sugar-preparation, constitutes one of the most valuable kinds of fodder. There is one remark by Chaptal which is of much importance in relation to the manner in which the manufacture should be carried on. He says:—"To insure success for beet-root sugar establishments, it is necessary that they be united to rural cultivation. These kind of manufactures are misplaced in towns. The roots are more expensive when purchased from others, than when the manufacturer grows them himself; the remaining parts of the plant find scarcely any market in a town; hand-labour and fuel are dearer; and farm-servants are less easily procured." Acting on these principles, Chaptal himself, as we shall show in our concluding article, combined in his own person the agriculturist and the manufacturer.

From numerous experiments made upon the beet root of Bondues, a village situated near Lille, Pelouze found that a soil in which tobacco had been grown the preceding year yielded roots of a considerable size, and of a saccharine richness, equal to that of roots of a smaller size, and superior to similar roots planted in a soil not previously occupied with a tobacco crop. In two neighbouring fields, one of which had had a tobacco crop the preceding year, and the other had not, the produce of sugar from the former was fifty per cent. more than from the latter.

It thus appears, that the French chemists and agriculturists have succeeded in bringing the cultivation of the beet to a point of considerable importance. Indeed, at the present time, the quantity of beet-root sugar made in France very nearly equals that of the cane-sugar imported from her colonies. The relation which now exists, or ought to exist, between the two kinds of sugar, with respect to taxation, encouragement, &c., although occupying the attention of persons in that country, would have no interest for the English reader, since beet-root sugar is not cultivated in the British dominions.

We have one more paper to present on this subject, in order to work out the plan proposed. We gave, in the second article, a detail of the processes adopted forty or fifty years ago, in Germany; but we wish to give an idea of the methods actually adopted in France. Chaptal was a chemist, an agriculturist, and a manufacturer, and has given a full account of the modes which he adopted for cultivating the plants, gathering the roots, expressing the saccharine juice therefrom, and obtained crystalline sugar from the juice. A brief account of his process will occupy our concluding paper.

To preserve health is a moral and religious duty: for health is the basis of all social virtues; we can be useful no longer than while we are well.—DR. JOHNSON.

MEDICINE is God's second cause of health.

IN exalting the faculties of the soul, we annihilate, in a great degree, the delusion of the senses.—AIME MARTIN.

KING Louis the Twelfth of France was naturally inclined to economy: this was once made a topic of ridicule in his presence, to which he replied, "I had rather see my courtiers laugh at my avarice, than my people weep at my extravagance."

EVERYTHING is either lost or won in the heart; it is there that all battles take place: all moral contests are carried on independently of external objects, and previous to the visible scuffles of divided interests.

"O my son," says an Arabic proverb, "take care that your mouth breaks not your neck."

DEATH is at all times solemn, but never so much so as at sea. A man dies on shore: his body remains with his friends, and "the mourners go about the streets;" but when a man falls overboard at sea and is lost, there is suddenness in the event, and a difficulty in realizing it, which gives to it an air of awful mystery. A man dies on shore, you follow his body to the grave; a stone marks the spot. You are often prepared for the event. There is always something which helps you to realize it when it happens, and to recall it when it has passed. A man is shot down by your side in battle, and the mangled body remains an *object*, and a *real evidence;* but at sea, the man is near you, at your side you hear his voice, and in an instant he is gone, and nothing but a *vacancy* shows his loss. Then, too, at sea—to use a homely but expressive phrase—you *miss* a man so much. A dozen men are shut up together in a bark, upon the wide, wide sea, and for months and months see no forms and hear no voices but their own, and one is taken suddenly from among them, and they miss him at every turn. It is like losing a limb. There are no new faces or new scenes to fill up the gap. There is always an empty berth in the forecastle, and one man wanting when the small night watch is mustered. There is one less to take the wheel, and one less to lay out with you upon the yard. You miss his form, and the sound of his voice, for habit has made them almost necessary to you, and each of your senses feels the loss.—*Two Years before the Mast.*

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

Saturday Magazine.

No. 585. AUGUST 14TH, 1841. {PRICE ONE PENNY.

WARWICK CASTLE.

Now Warwick claims the song; supremely fair
In this fair realm; conspicuous raised to view,
On the firm rock, a beauteous eminence
For health and pleasure formed. Full to the south
A stately range of high embattled walls
And lofty towers, and precipices vast,
Its grandeur, worth, and ancient pomp confess.

AMONG the number of castellated mansions (remarks Mr. Britton), which formerly abounded in England, very few have continued to be inhabited, and adapted to the domestic arrangements of modern times. Those of Windsor, Raby, Lumley, and Warwick, are therefore remarkable: for whilst they present the external features of feudal ages, and impress the spectator with sentiments of chivalry and romance, their apartments are at once spacious and elegant; their inmates are accomplished and polite; and the annexed gardens and pleasure-grounds are replete with every charm to fascinate the eye and please the senses. Formerly these places were intended to protect a rude and austere race of mail-clad knights and their vassal dependants; now they are occupied by men of enlarged and enlightened minds, and by women of suavity, benevolence, and beauty. Instead of the art of war, and human butchery, as formerly studied within their walls, we now find the fine arts and literature cultivated and understood. The contrast is powerful and cheering: for now, instead of viewing the frowning battlements and dismal cells with dread and terror, we contemplate them as objects of grandeur and picturesque beauty.

The present Castle of Warwick affords specimens of the workmanship of different and distant ages. The oldest parts present some bold and almost impregnable specimens of Norman architecture, whilst a few parts display the tasteless additions of modern times. The foundation is laid on a vast bed of rock, which rises precipitously from the northern bank of the river Avon. Impending over this classical stream is a long line of buildings, consisting of towers, state apartments, and subterranean offices. At the south-eastern extremity is that majestic edifice called Cæsar's tower, and, at the opposite end, is a bold projecting turret. This front extends above 400 feet, and presents, in its elevation, a grand, picturesque, and stupendous mass. From the level of the water to the basement floor, the rock has been cut away in an almost perpendicular face, and is nearly of equal height with the whole superincumbent building. This mass of rock is diversified by hanging shrubs, fissures, and varied stains and mosses. Projecting from it, near the eastern end, is a flour mill, from which a ledge of rocks extends across the river, and occasions a constant water-fall, of nearly the whole stream. The southern front, with the return of the western side, consists of a gallery, a tower gateway to the inner court, and a flanking wall connecting this gateway with the keep-tower, which occupies the summit of a high conical

mount. The embattled and terraced wall again returns from this keep round the northern side of the inner court; and about midway between the eastern and western ends, it forms a semicircular sweep, and is flanked and guarded by two bastion towers. The walls and small apertures of these exhibit great strength. From these the wall continues to the north-east angle, where is a lofty polygonal building called *Guy's Tower*, and here the wall returns at right angles to the grand entrance tower gateway. Hence it passes to the great tower at the south-eastern angle. The whole of the walls are surmounted by embrasures, loop-holes for arrows, a parapet, and a terrace walk. The latter was conducted through the towers up and down flights of steps, and to various merlons and machicolations. Near the centre of the eastern wall is the principal entrance-gateway. Mr. Britton says that this is a grand and very curious feature of castellated architecture, and is perhaps the most perfect specimen remaining in the country. A bridge, formerly a draw-bridge, is thrown across a wide fosse; on the inner bank of which is the chief portal, flanked by two octagonal towers with small loop-holes in each face, holes over the arch, and a portcullis within. Further under the archway was a second barrier formed by strong folding doors or gates. About forty feet further was a second portcullis, and still within that was another pair of doors or gates, filling up a large arch. This passage, nearly ninety feet long, opens to the inner ballium or court by a lofty arch, flanked by octagonal towers, which rise to a considerable height, and contain several stories or floors, formerly used for the residence of porters and domestics. Other rooms, staircases, and galleries were distributed in various parts about this entrance. Near the doors and portcullisses were apertures in the vaulted roof for annoying assailants, and under the arched way were several niches for wardens, and door-ways to stairs, to rooms, and to the walls. After passing through this long, gloomy, and strongly-guarded archway, we come to the inner ballium, surrounded by the principa dwelling apartments to the south; the lofty keep-tower and mount, with a tower gateway to the west; a high embattled wall with bastion towers to the north; and the Gateway tower, with Guy's tower, Cæsar's tower, and a lofty connecting wall to the east.

The two towers just named are very imposing objects and interesting examples of architectural design. The date of the elevation of Cæsar's tower is unknown: the mode of construction is somewhat rude, and possesses many singularities. "Jutting from one side of this tower is an embattled turret of stone, where imagination may place the herald at arms, demanding, in a long past century, the name and purpose of those so hardy as to advance unbiddden." The other tower is named after the champion of the castle, the redoubted Guy*. This part of the structure is upwards of 100 ft. in height, and was built by Thomas Beauchamp, earl of Warwick, in 1394, at the cost of 395*l.* 5*s.* 2*d.*

The entrance is flanked by embattled walls, richly clothed with ivy; and the deep moat, now dry, is lined with various shrubs, and ornamented with trees of a vigorous and noble growth. The disused moat is crossed by a stone bridge, and the entrance is by double machicolated towers, through a series of passages once fraught with multiplied dangers for the intruder. In the great court, to which the visitor passes, the display is truly magnificent. The area is a soft green sward; but, spread around, are viewed the remains of fortifications raised in turbulent ages. The relics are perfect in outline, and no battlement exhibits the havoc of time; while the hand of taste has spread a softness over the whole productive of most grateful relief. We see with pleasure the ivy bestow pictorial mellowness on parapets and turrets, which must have been only rugged and formidable when manned with warriors in steel, and fresh in early masonry; but now the broad Gothic windows supplant the cheerless single light and fatal loop-hole.

* In one of the rooms attached to Cæsar's Tower are still preserved the sword, shield, helmet, &c. ascribed to the legendary hero Guy.

The interior of this august fabric, (which is furnished in a chaste but magnificent style,) we need not describe. A few historical facts relating to the castle may, however, be found interesting.

There is no record concerning the precise era at which a fortified building was founded on this spot. The castle has been described by some writers as of British, and by others as of Roman, origin. The foundation seems to have taken place before the Norman Conquest; and it is probable that Ethelfleda, the daughter of King Alfred, first constructed a strong-hold in this place. The fortress was, for some time, the residence of the Vice-comites, or lieutenants of the Earls of Mercia; and Turkill, who was Vice-comes at the time of the Conquest, was directed by William the First to add considerably to the extent and strength of the fortifications. Soon afterwards the Norman monarch appointed Henry de Newburgh as Governor, and created him Earl of Warwick. At the latter end of King Stephen's reign it was occupied by that monarch's soldiers, for Gundred, countess of Warwick, turned these out to make room for Henry, duke of Normandy, afterwards crowned as King Henry the Second. In the nineteenth year of this reign the sheriff accounted for vi*l.* xiii*s.* iv*d.* for twenty quarters of bread-corn; xx*s.* for twenty quarters of malt; c*s.* for four beefs salted; xxx*s.* for ninety cheeses; and xx*s.* for salt, then laid up in the castle. The next year xxx*l.* x*s.* viii*d.* were paid to soldiers in garrison here; and vi*l.* xiii*s.* xi*d.* for repairs.

In the reign of Henry the Third the extraordinary strength of this building was alleged as a reason for prohibiting the widowed Countess of Warwick from marrying any person without the king's consent. In the furious contests which afflicted the latter years of Henry the Third, Warwick Castle, almost impregnable to open assault, was taken, in consequence of William Mauduit, the then earl, neglecting to keep due guard. The rebels were stationed at Kenilworth in great power. They surprised, and took possession of, Warwick Castle, took the earl and his countess prisoners, and demolished some of the walls. The damage thus done to the castle was not repaired till the reign of Edward the Third, when Thomas Beauchamp, earl of Warwick, "erected anew the outer wall of the castle, with divers towers." The castle was afterwards successively occupied and governed by John de Clinton, Thomas Holland, earl of Kent, George Plantagenet, duke of Clarence, and Earl of Warwick, who made some alterations in the buildings, and proposed to make more, but was attainted of high treason by his brother, King Edward the Fourth, who ordered him to be drowned in a butt of Malmsey wine.

The castle is described as being in a very ruinous condition in the second year of King James the First, when it was granted to Sir Fulke Grevile, who expended "upwards of 20,000*l.* in repairing and adorning the same for a family-seat." "He made it," says Dugdale, "not only a place of great strength but extraordinary delight, and the most princely seat within the midland parts of England." He was created Baron Brooke, and, according to his monumental inscription, was "servant to Queen Elizabeth, counsellor to King James, and friend to Sir Philip Sidney." He was murdered by his own servant at Brooke House, in Holborn, and was succeeded by Robert Lord Brooke, who took part with the parliament against Charles the First. Warwick Castle now became a garrison. It was besieged in August, 1642, by the Earl of Northampton, and defended by Sir Edward Peito, with a very small force. Soon after was fought the celebrated battle of Edge-hill. Lord Brooke was killed by a musket-shot at Lichfield, and his son Robert, in more peaceable times, "fitted up the state apartment at a considerable expense," and made

many other improvements. The subsequent noble possessors of the castle have from time to time so arranged and decorated the halls, that, while a proper allusion is made to the antique castellated outlines of the edifice, the purely domestic comforts of the homes of England are not forgotten.

BEET-ROOT SUGAR.

IV. The present mode of preparation in France.

Chaptal sows the beet seeds in the month of April or the beginning of May, and thus avoids on the one hand many inconveniences of cold and rain likely to result at an earlier period, and inconveniences of an opposite kind if left to the month of June. He recommends that every cultivator should prepare the seeds for himself, by using such as he had collected, in the previous September, from the beet plants, each of which will yield five or six ounces of seed. All arable lands are fitted for the growth of the beet; and Chaptal ploughs three times for the preparation of the beet-sowing, viz., twice during the winter, and once in the spring.

There are different modes of sowing the seeds. The first is, indiscriminately over the ground; a mode which takes much less time, at a season when all hands are busy; but in subsequently transplanting the young plants, they are very likely to be injured. Other methods are adopted by different persons; but the one which Chaptal prefers is, sowing in rows. When the ground is prepared, a range of depressions, about an inch in depth, are made by means of a rake whose teeth are eighteen inches apart; and women, who follow the rake, deposit seeds in the depressions, at a distance of about sixteen inches apart: each woman thus sows six or eight thousand seeds per day, and covers them over with earth by the hand.

As the beet is likely to be injured by the vicinage of other plants, and also by the earth being hard or not well drawn up around it, the young plants require careful attention. Weeding is necessary twice during the growth, not only for the removal of noxious plants, but also for the purpose of opening the ground to the reception of air and moisture. By the month of October the roots have acquired that perfection which fits them for further operations, and the plants are taken up before the frost arrives. In the southern and warmer parts of France, the root comes to maturity at an earlier period, and must be gathered early, else the saccharine principle undergoes changes which unfit it for the required purpose.

As each root is taken up, the leaves are cut off and left on the ground, where cattle and sheep feed on them; and it is found that the leaves which die and serve as manure to the soil bring it into a state peculiarly fitted for a corn crop. As the roots, when collected, are extremely sensitive to heat and cold, great care is required in their treatment. They are left on the field for a short time, to evaporate some of their moisture, and are then taken to a barn where they are laid in heaps, with layers of straw beneath, around, and above the heap. Some cultivators dig a trench in the open field, line it with straw, and fill it up with the beet-roots, which are then covered with thatch or straw. Shielded in this way from the weather, the roots remain until about to be used.

The first operation on the roots is to cleanse them from dirt and mould, and to cut off the rootlets and other useless parts. They are then ground to pulp by a machine, moved either by horses or by a water-mill. The machine consists of two cylinders, each about twenty-four inches in diameter, the surfaces of which are covered with teeth. The cylinders being made to rotate very rapidly, the roots are brought in contact with them, and speedily reduced to fine shreds or pulp. (The reader will recollect that, in Gottling's method, the roots were sliced and hung upon strings to dry). The pulp falls into a vessel lined with lead. This method of rasping is found much more effectual than expression, for the latter method yields but forty or fifty per cent. of juice whereas the former often yields as much as eighty.

As the pulp is ground, it is put into strong canvas bags, and placed under a powerful press to squeeze out the juice. The residue is stirred, and subjected to a second, or even third, pressure, till all the juice is extracted. The liquor, as it is pressed out, runs into a copper, until it is two-thirds full. A fire is now lighted, and the contents of the copper are raised to a temperature of about 180° Fahr. In the mean time, a mixture of lime and water has been prepared, by gradually pouring as much water upon ten pounds of quicklime as will give a cream-like consistency to the mixture. This is poured into the copper when its contents are at 180°, and is well mixed with the juice by stirring. The heat is then increased till the mixture boils, when a thick and glutinous scum rises to the surface. As soon as clear bubbles arise through this scum, the fire is suddenly extinguished by water being poured on it, or by a proper damper. The scum hardens as it cools; and the sediment being deposited, the liquor becomes clear, and of a light straw colour. The scum is then carefully removed with a perforated skimmer, and is put into a vessel till such time as the liquor remaining in it can be pressed out. A cock is now opened about five inches above the bottom of the boiler, and all the clear liquor is drawn off. Another cock, lower down, lets out the remainder until it begins to appear cloudy; that which still remains is afterwards boiled again with that extracted by pressure from the scum. The clear liquor is now subjected to evaporation in another boiler which is wide and shallow. The bottom is but slightly covered with the juice at first, and it boils rapidly. As the water evaporates, fresh juice is admitted. When a certain degree of inspissation, or thickening, has taken place, animal charcoal is gradually added; in such proportion, that one hundred weight of charcoal is required for the juice of two tons and a half of beet, which is now reduced to about four hundred gallons. The evaporation by boiling continues until a regular syrup is obtained. This is now strained through a linen bag, and the liquor is kept flowing by means of steam or hot air, and assisted by pressure. In two or three hours all the clear syrup will have run through.

The syrup then goes through a farther succession of processes to convert it into sugar. It is again boiled and skimmed, until it has attained a certain degree of concentration, which is known thus;—the skimmer is dipped into the syrup and drawn out; some of the thick syrup which adheres to it is taken between the thumb and finger, and held there till the heat is reduced to that of the skin; the finger and thumb are then separated, and if the syrup be of a proper strength, a thread will be drawn out, which has the transparency of barley-sugar When the syrup has this proper degree of consistency, called "proof," the fire is put out, and the syrup is carried to the cooler, which is a vessel capable of containing all the syrup produced by four operations or boilings. Here the sugar is to crystallize. As soon as this process commences, the whole is well mixed and stirred; and, before it becomes too stiff, earthen moulds, of the well-known sugar-loaf shape, are filled with the crystallizing mass. When these moulds are full, they are carried to the coolest place on the premises. As the crystallization goes on, the crust formed on the top is repeatedly broken, and the whole is stirred till the crystals are collected in the centre; the crystallization is then allowed to go on without further disturbance. In three days the process is so far advanced, that the pegs which are put into the holes at the points of the moulds may be taken out, and the molasses or uncrystallizable syrup allowed to run out. White syrup is then poured on the top of the

moulds, which filters through the mass, and carries part of the colouring matter with it.

Sometimes this latter process is effected by what is termed *claying*. A stratum of fine moist pipe-clay is laid on the sugar in the mould; and clear water being poured on the clay, filters through it, and carries off the colouring manner remaining in the sugar. But if great care be not taken, one-fifth or sixth of the sugar becomes dissolved, and is carried off in the form of syrup. Chaptal at one time employed, instead of either of these two methods, another in which alcohol was poured on the sugar, in such manner as to carry off the colouring matter. But he abandoned the plan after two months' trial; finding that he lost a considerable quantity of alcohol, and that the sugar retained a little odour of the alcohol.

By whatever mode the sugar is bleached in the moulds the loaf is removed from the mould as soon as hardened, and placed in a stove, where it remains till dry.

The molasses, or uncrystallizable syrup, which remains from this process, is very nearly identical with that produced from cane-sugar, and from which *rum* is distilled. We shall not, therefore, detail the plan which Chaptal adopted for distilling spirit from the molasses, as that is an operation which does not belong to a sugar refinery.

The greater part of the operations described above are nearly the same as those by which sugar is prepared from the juice of the sugar-cane, except that much greater skill and nicety are required, on account of the smaller comparative quantity of sugar contained in the beet. But when the sugar is once prepared, it is impossible to distinguish it from cane-sugar. Five tons of clean roots produce about four and a half hundred-weight of coarse sugar, which give about a hundred and sixty pounds of double-refined sugar, and sixty pounds of inferior lump-sugar. The rest is molasses, from which spirit may be obtained. The dry residue of the roots, after expressing the juice, consists chiefly of fibre and mucilage, and amounts to about one-fourth of the weight of the clean roots used. It contains all the nutritive part of the root, with the exception of four and a half per cent. of sugar, which has been extracted from the juice, the rest being water.

The political and commercial considerations involved in the question, how far the cultivation of the beet-root will permanently benefit France is one into which we need not farther enter, as it has no particular relation to our own country.

ON CHESS. No. XV.

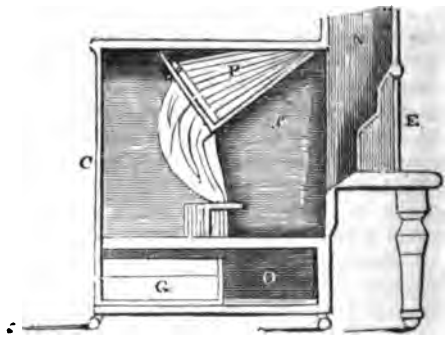
THE AUTOMATON CHESS-PLAYER. 3.

AT the time when the automaton made its first appearance in England, chess was extensively patronised and played by the upper classes of society. The great Philidor spent a large portion of his time in London, formed a large chess-school around him, and excited public attention by those wonderful exhibitions for which he was so celebrated; viz., playing at the same time three different games against three good players, without seeing any one of the chess-boards. These circumstances contributed to make the chess-automaton a subject of the greatest curiosity, and although the sum of five shillings was charged for admission to see the automaton, yet hundreds and thousands of persons crowded to the exhibition.

Mr. Twiss, in his amusing work on Chess, informs us that he was present on some of these occasions, and conversed with M. de Kempelen, who once remarked:—

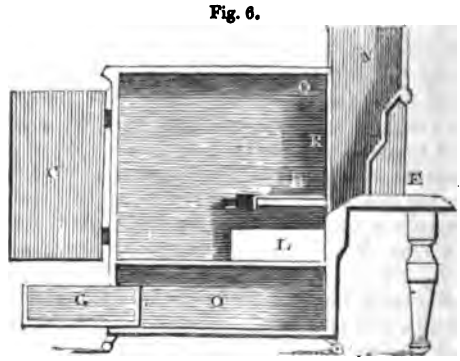
That the most surprising circumstance attending his automaton was, that it had been exhibited at Presburg, Vienna, Paris, and London, to thousands, many of whom were mathematicians and chess-players, and yet the secret by which he governed the motion of its arm, was never discovered. He prided himself solely on the construction of the mechanical powers by which the arm could perform ten or twelve moves: it then required to be wound up like a watch; after which it was capable of continuing the same number of motions. The automaton could not play unless M. de Kempelen or his substitute was near it, to direct its moves. A small square box during the game, was frequently consulted by the exhibitor; and herein, (says Mr. Twiss,) consisted the secret, which he told me he could in a moment communicate. He who could beat M. de Kempelen was of course certain of conquering the automaton.

Fig. 5.



A vertical section of the Chest, with the false back raised. Side view.

Fig. 6.



The same, with the false back closed. Side view.

This last assertion, however, is by no means true, as we shall see hereafter.

The *Monthly Review*, for April 1784, has the following remarks;—

Many are simple enough to affirm that the wooden man played *really, and by himself*, (like certain politicians at a deeper game) without any communication with his *constituent*. It appears, indeed, as yet unaccountable to the spectators, how the artist imparts his influence to the automaton at the time of his playing, and all the hypotheses which have been invented by ingenious and learned men to unfold this mystery are but vague and inadequate; but were they even otherwise, they rather increase than diminish the admiration that is due to the surprising talents and dexterity of M. de Kempelen.

A pamphlet was at the same time published in London, entitled, *The Automaton Chess-player Exposed and Detected*; in which the author says:—

I see a foreigner come among us, and demand five shillings a-piece admittance, to see what he calls an automaton chess-player. An automaton is a self-moving engine, with the principle of motion within itself; but this chess-player is no such thing. And therefore to call it an automaton, is an imposition, and merits a public detection; espccially, as the high price of five shillings for each person's admission, induces the visitor to believe that its movements are *really* performed by mechanic powers: when, in fact, the whole delusion is supported by invisible confederates.

The opinion became very common that the automaton was moved by a concealed player, but where and how he was concealed after the apparently complete exposure of the interior of the machine, was as great a mystery as ever. One pamphleteer declares that he saw the ermine trimmings of the Turk's outer garment move once or

twice, when the figure should have been quite motionless; and he is convinced that there is a concealed confederate: "for," says he, "they only exhibit the automaton from 1 till 2 o'clock, because the invisible player could not bear a longer confinement; for if he could, it cannot be supposed that they would refuse to receive crowns for admittance from 12 o'clock to 4, instead of from only 1 to 2."

The automaton in the course of its travels visited, by special invitation, the court of Frederick the Great, at Berlin, where it conquered the monarch and his whole court. Eager to possess himself of the secret, Frederick for a large sum of money bought the automaton, and in a secret interview with M. de Kempelen learnt the whole art and mystery of this wonderful machine. Certain it is, that like a child who cries after a new toy and no larger regards it when possession has shorn it of its novelty, Frederick threw aside the automaton, and for many years it lay forgotten and neglected among the worn-out furniture of the Royal Court of Berlin.

M. de Kempelen died at Vienna in 1804. In 1806 when Napoleon occupied Berlin, we find the automaton chess-player under another master, and prepared again to astonish the world. Napoleon played a game with the automaton. After a few moves he purposely made a false move; the automaton inclined its head, replaced the piece, and made a sign to Napoleon to play correctly. He did so, and after a few moves, again played á piece incorrectly. On this occasion the automaton removed the piece from the board and played its own move. Napoleon was highly amused, and after a short time made a false move for the third time, when the automaton swept the pieces from the board and declined to continue the game.

We need not trace the progress of the automaton in a second tour that it made through various cities of Europe, until we again find it in London in 1819. We will merely stop for a moment at the Court of the king of Bavaria, to relate an anecdote of Prince Eugene Beauharnois, the king's son-in-law, told so amusingly by Mr. George Walker—

Eugene was fond of chess, and money was of little object. He could not resist the temptation of acquiring the secret which had set the wits of the world at defiance for so many years; and for the second time was the automaton chess-player sold like a slave for a price. Thirty thousand francs were asked by the proprietor,* and this sum was unhesitatingly paid by Prince Eugene for the machine and its key.

And now the moment has arrived when the treasured mystery of de Kempelen is to be again opened at the golden bidding of royalty. The veil is about to be raised and the curiosity of the king to be gratified. The courtiers are dismissed the room, the door locked by Eugene, and every precaution taken to ensure his acquiring the sole knowledge of the hidden enigma. The prince is alone with the demonstrator; the latter, unhesitatingly and in silence, flings open simultaneously all the doors of the chest; and Prince Eugene saw—what he saw!

Eugene, somewhat like his royal predecessor in the secret, found that when once revealed, the automaton was not worth keeping. He therefore acceded to the proposal of M. Maelzel to return him the machine on condition of paying interest for the purchase money. The automaton again proceeded on its travels—visited Paris, and was received with enthusiasm, and by the year 1819 it was again established in London in Saint James' Street.

Crowds of visitors flocked to the exhibition: the periodical literature of the day gave it almost unqualified praise, and the success was the more complete in consequence of the automaton vanquishing all its opponents with a few trifling exceptions. This encouraged the proprietor to offer odds to all comers, and forthwith the automaton gave the pawn and move to all its antagonists, and scarcely lost one game in a hundred. A volume was published in 1820 entitled, *A Selection of Fifty Games, from those played by the Automaton Chess-player during its exhibition in London in* 1820. *Taken down by permission of Mr. Maelzel at the time they were played.* In the preface to this work it is stated that:—

Since the commencement of its exhibition in February last, the automaton chess-player has played, (giving the pawn and move) nearly three hundred games, of which it has lost about six.

In our next article we will fully explain the mystery of the Automaton Chess-player.

* M. Maelzel, the celebrated fabricator of the musical metronome and other works of art.

PROBABLE ORIGIN OF THE DOCTRINE OF THE SUPREMACY OF THE POPE.

For many centuries, Rome has been a city of splendid ruins, with no empire except that vast supremacy which is rested upon the supposed grant of the Almighty.

At the time when the apostles Peter and Paul established the Church in Rome, it was the capital city of the civilized world. On such a capital, perhaps, the sun never shone. It is saying much less than the truth to assert, that what Paris is to France, or London to England, Rome was to the world; because France and England know that there are other powers upon the earth independent of their respective governments; but the subjects of that empire-city saw no power upon the earth independent of Rome. The ambassadors of every potentate came to do homage before the majesty of a single throne. Dissensions amongst nations were brought for settlement before the senate. Rival kings, contending for the same tributary diadem, submitted their claims to that august tribunal. The very name of Roman citizen was a protection and a privilege in every land, and an appeal to Rome was the final recourse of universal justice.

In our age, it is not easy—indeed it is hardly possible—to conceive aught of such a city. Divided as the nations have been ever since her decline and fall, and each government displaying but a fractional part of her whole dominion, it is hard for us to imagine the majesty, the force, the concentration, the harmony, the glory, the beauty, the overpowering splendour of the spectacle which ancient Rome, in the days of Augustus, displayed to the admiration of a subject world. To the moral sense, the picture was as sublime as it was beautiful. The whole earth in peaceful subordination to one man, and he content with the kind and moderate titles of general and father—the temple of Janus shut, and wars and commotions almost done away by the wise administration of supreme justice—the whole of the mighty empire bringing its treasures and its allegiance to the great centre, which was its fountain-head of power, and enjoying in return the rich advantages of protection and government, the valour and the labour of its legions, its science, and its literature, which, like the nerves and life-blood of the natural body, were diffused freely to the remotest extremities—all this displayed a picture of human unity, on which, in its theory, the philanthrophist and the philosopher might well gaze with delight; nor can I imagine how, with such a picture before them, the minds of the best of men at that day could help being strongly affected.

About the time when the last touch of perfection had been given to this wonderful empire, Christianity arose, and a Church was established in the imperial city. In wealth, in numbers, in importance, it is obvious that it must soon have surpassed all other. Everything in the chief city of an ordinary kingdom acquires a kind of practical supremacy over the whole of that territory. The professions, the trades, the fashions, the literature, the amusements of the capital, give a sort of law to the rest, by a perfectly familiar principle of deference, which is acknowledged and understood by all men. What must

have been the strength of that principle in regard to imperial Rome?

But, perhaps, it may not be useless—inasmuch as the mind is often aided in its reflections on the force of circumstances by transferring them to some familiar object of our own day,—if I try to illustrate my idea of a secular supremacy by a simple analogy.

Let us suppose, then, that we had sent a number of missionaries to plant the Gospel in China, who had succeeded in establishing Churches in several of the provinces of that extensive country. In the progress of their labours, we are informed that a Church is gathered in the capital itself. The emperor, the powerful mandarins, the officers of government, the men of influence, are now likely to be brought under the blessed yoke of the Gospel. Is it not reasonable that we should attach tenfold more importance to that Church than to the provincial Churches—that for its support we should be most anxious—that into its progress we should most fondly inquire, and that we should expect, nay advise, all the other missionaries through the nation to be most solicitous for its welfare, and most ready to make its advancement the primary object of their prayers and toils?

If, however, such would be our views, at a distance from the field of action, how much more would the same principle of expediency operate on the missionaries themselves! Of what vast importance would they esteem the progress of truth in the capital of the Chinese empire! How surely would they calculate that success *there*, was, in fact, success every where! How thankfully would they count the numbers of converts from the ranks of the influential and the great, not because their souls were of more value, but because the conversion of such as these was the readiest mode of breaking down the kingdom of darkness, and inducing multitudes to examine, with favourable dispositions, the system of truth; and how manifest it is, that, in such a case, the missionaries settled in the provincial Churches would readily grant a primacy of influence and consequence to their brethren in the capital city, which would make them the chief leaders, advisers, and, in fine, directors of the whole! And yet, in all this, we see at a glance that it is simply to be resolved into the importance of the local situation that it has no connection whatever with the spiritual rank or ecclesiastical dignity of the missionaries themselves, but is purely the result of judicious views of practical expediency.

Now, then, if we were called to draw up a code of regulations for a body of missionaries thus circumstanced, should we not, perhaps, think it proper to advise all due regard to these principles? Should we not say, Be careful about union, and in all your proceedings consult together, but especially do nothing without consulting with your brethren of the capital city. In order that the good cause should prosper it is necessary that you should resort to the Church established there as often as you can: by reason of its more powerful principality, being the seat of the government, and the very heart of the empire, the Church located there is the most important of the whole, and the brethren placed over it should have the chief direction in all your councils. Would not such advice as this be deemed prudent and wise by all men? And hence, is it not plain that we could go very far in support of a primacy, without departing in the least from the ground of secular superiority derived simply from the importance of the location?

But in the situation of the Christian Church, as planted in ancient Rome, there was much more than any modern analogy can furnish, to contribute to the same result. During seasons of persecution, when heathen rage was excited against the faithful, *The Christians to the lions!* was the first cry, and the Church in Rome was usually called upon to take the lead in the glory of martyrdom. In times of peace the crowds of philosophers and disputers which thronged the imperial city, drew out the best talents and strongest energies of the priesthood in the defence of truth. And the influx of strangers, the applications for aid, and the calls on liberality, which were sure to be most abundant where there was most inducement to attract them, would keep the sympathies, the hospitality, and the beneficence of that Church in the fullest action. Add to all this, that if the Christians in the provinces needed any indulgence from the government, their request could be best presented through the brethren at Rome; that the bishop of Rome was on the very spot where he had the best opportunity of appeasing the imperial wrath, or conciliating the imperial favour; that when the clergy or others had occasion to travel, his letters would have the greatest weight by reason of his local superiority; that when any of the prætors or provincial magistrates were likely to prove hostile to the Christian cause, the bishop of Rome was the only one who could hope to have influence sufficient with the officers of the court to have them counteracted or recalled; that writers on the Christian religion would first seek patronage and praise from the same dignitary, and that all who thought themselves aggrieved throughout the rest of the Church would naturally endeavour to strengthen their cause by the sentence of his approbation,—all this, and much more of the same character, suggests itself to a mind of common reflection, in tracing the various causes of the secular primacy obtained by that Church which was established near the throne of the Cæsars, in the empire-city of the world.

The last feature of the case presents the influence which these circumstances must have exerted on the minds of the Roman clergy themselves, when connected with the important fact that the secular empire of Rome was one mighty whole—the earth under one head,—the world under a single prince, and that prince called a father. Dull and stupid must the intellect have been that could fail to discover the application of this idea to the Christian Church,—for was it not in truth one kingdom under a single King?—one family under a Father? And why not give the benefit of this consolidation to the hierarchy on earth? Why not secure to the whole Church that order, and subordination, and peace under a single earthly head, as the Lord's vicegerent, which heathenism had brought, in the affairs of human government, to such a marvellous system? Should the hosts of Satan be better marshalled than the hosts of God? Should one single will be felt and obeyed to the remotest bounds of that mighty empire, and should not one single Church, which is the spouse of Christ, be much rather the ruler and mistress through the whole of Christendom? On such a plan, how much more union might be expected; how much more peace; how much less opportunity for heresy and false doctrine; and how much more glorious would be the victory of the Lord's people, when they should appear to the heathen one mighty host, "bright as the sun, fair as the moon, and terrible as an army with banners."

I can easily conceive that the best men of the primitive ages, being accustomed to have this astonishing empire of the world continually before their eyes, and to hear it as the common and favourite theme of the orators, and courtiers, and civilians, and soldiers, and travellers round them, might readily in this manner, be led to contemplate the desirableness and practicability of a similar system in the Church, and to cherish and encourage every advantage they possessed for its perfect consummation, as providential instruments placed in their hands by Divine wisdom, for this especial purpose. I can easily conceive, that under this influence of their habitual views, they would find, in Scripture, analogies, and even declarations, which—had not the idea of universal empire been first rendered familiar by the political state of the world—would never have occurred to them. That thus disposed, they would derive a supposed

parallel in principle from the high priest of ancient Israel, and instead of applying it to the single district of a bishop, would apply it to the whole of Christendom—that they would lay hold on our Lord's addresses to Peter (the only passages in the New Testament which ingenuity itself could put into the semblance of Divine authority,) and begin to interpret them in favour of their ecclesiastical empire,—that all who were connected with Rome, who had obligations to the Church there, who feared their censure or loved their praise, or who had anything to expect from their influence, would readily adopt the system; and that the converts amongst the great and noble, who had been accustomed to the maxim, that Rome was the mistress of the world, would be prompt and zealous in defence of an idea which harmonized so well with their own political and patriotic feelings—all this I can conceive most readily, as easily accounting for the rise and progress of a secular primacy, without calling it by any harsh or offensive name. I do not, therefore, look upon your doctrine as having its *origin* in tyranny, in fraud, or in a desire to lord it over mankind. Its beginning, I think, I have traced to a much better set of principles. And as I hold myself bound in all cases to look for the most favourable motives and causes of human action, so I attribute to the policy of the primitive Church of Rome nothing more than can be fully explained by the favourable influence of their location, their habits of dwelling on the theory and practice of universal empire, and their desire to secure the unity and peace of the Church; on the supposition that they were holy and well-meaning men.

Of the difference between the local primacy and that now asserted, I shall only for the present observe that the one was secular, the other is spiritual; the one was human, the other is divine; the one interfered with the liberty of no other Church, the other claims authority over the whole. The one grew out of the political pre-eminence of ancient Rome, and should now be yielded, of right, in their respective proportions, to the other cities, which, in the order of Providence, have attained a far larger measure of influence over the affairs of men; but the other insists on the fiat of the Almighty, superior to all earthly mutation, that Rome shall be the mother and the mistress of the Christian world to the end of time.—BISHOP HOPKINS.

ON DREDGING.

AMONG the great effects produced by apparently small causes may be ranked the accumulation of sand and mud in rivers, harbours, canals, and basins, by the settlement of the solid matters brought down by rivers from the land. The sand-banks near the mouths of the Scheldte, the Meuse, the Rhine, the Elbe, the Thames, the Humber, and other considerable rivers, furnish important evidence of the extent to which this subsidence often proceeds, and of the serious consequences which result therefrom to shipping. Geologists have enumerated many remarkable instances of the effects thus produced, in which a place, once regarded as a sea-port, is now to all intents and purposes an inland town, such as Sandwich in Kent, by the subsidence of sand and mud on the banks. It forms no part of our present object to enter into a geological inquiry on this matter, but to detail the means whereby a river, when too much choked with sand and mud, is cleansed.

The Dutch, whose country presents an extraordinary example of the effects of these fluviatile deposits, long ago devised an apparatus called the *spoon-dredging machine*, for removing some of the sediment from the beds of their rivers and harbours. From the Dutch its use passed to the English, and we may now frequently see such an instrument employed on the River Thames, although not so often as before the introduction of steam-dredging machines.

The cut at the end of this article will show pretty clearly the action of the spoon-dredging machine. In the first place, there is a boat, varying in size according to the situation in which it is to be worked, but generally from twenty to sixty tons burden. It is built so as to float with an easy draught of water, and is usually built as an open boat, with a kind of inner floor; but in some cases it is flush-decked, carrying its cargo wholly upon deck. Sometimes the matters excavated from the bottom of the river are employed in banking on the sides of a river, or in ballasting ships, but in other instances emptied out into some deeper part of the same river; and when the latter is the case, the boat is provided with a kind of trap-door at bottom, to let out the mud. In this case a hold of two compartments, one fore and one aft, is formed, represented in the cut by the lines passing obliquely downward, and shaped like a hopper, narrower at the bottom than at the top. Each of these apertures has an opening in the bottom, through which the mud is dropped when the flap-door A is opened.

The spoon or shovel B consists of a strong ring or hoop of malleable iron, the cutting part of which is of steel; it is about six or seven feet in circumference, and properly formed for dredging upon soft mud or gravelly ground. To this ring is strongly attached, by means of thongs, a large bag, made sometimes of bullock's hide, but more generally of tanned leather; and peforated with a number of small holes, for allowing water to drain off. This bag, the capacity of which is about four or five cubic feet, being fixed to the ring, the spoon-bowl thus formed is attached to a pole thirty or forty feet long, or else to a pair of sliding poles, so connected as to admit of being lengthened or shortened according to the depth of the water in which the apparatus is to work. A rope is attached to the bottom of the bag, for directing its position at the commencement of each operation. The apparatus is generally worked with a chain or rope, brought from the spoon to a winch worked with wheel and pinion, through a block suspended from a small crane used for hauling the bag and its contents along with the progress of the boat, and in lifting the spoon over the gunwale to be emptied into the hopper of the boat. The purchase rope is led along the deck to the winch, by a block placed in a proper direction for this purpose. These boats are generally managed by two, three, or four men, who with this simple apparatus can lift from twenty to sixty tons of sediment from the bottom, at a depth of two and a half or three fathoms, when the ground is somewhat loose and favourable for the operation. Their mode of proceeding is as follows:—The barge being moored over the place where it is proposed to dredge, and one end of the working-rope being fastened to the chain of the spoon, and the other end to the barrel of the crane, the man who is stationed at the handle or pole of the spoon, immediately allows the spoon to fall into the water. At the same moment the man at the crane-work throws it out of gear, when a third man seizes the small rope which is fastened to the bottom of the bag, and runs with it along the gunwale, and prevents the spoon from sinking until it gets to the other end of the barge. When this is effected, the man at the pole turns it up, inclining the pole head towards the crane-end of the barge, and takes a turn with a small rope round the pole and rail of the vessel, which keeps the spoon dredging along in its proper position. The man at the crane draws along the spoon until it be nearly under the crane, when the man at the pole inclines it backward, and the contents (now deposited in the bag) are hoisted up and emptied into the barge.

In Holland, this apparatus, and other simple modes of dredging, are much practised upon the extensive flats at the entrance of their great navigable rivers, in connexion with the sluices and natural currents

issuing from their extensive basins and canals, and the excavated matter is generally of a mossy description, which, after being strongly compressed in moulds by that industrious people, is in a state to be speedily used as turf-fuel.

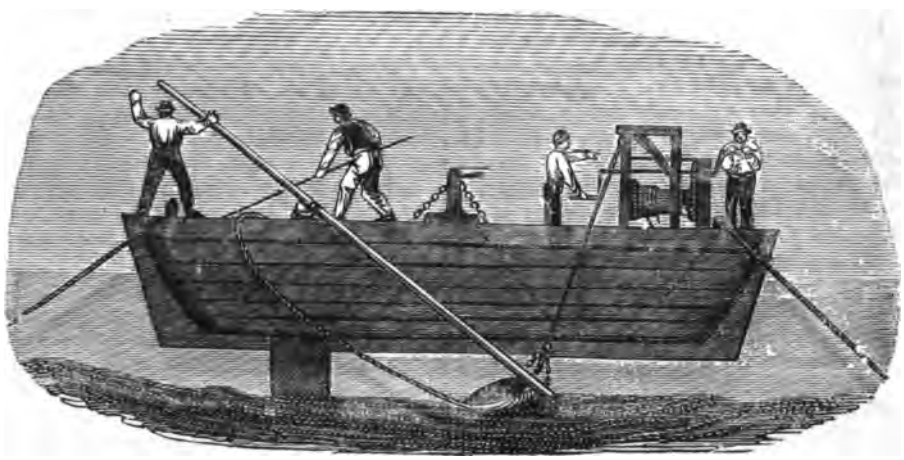
On the Thames (says a recent writer) the spoon-dredging machine is conducted upon a large scale, and in the most systematic manner, under the immediate direction of the Trinity Board. The stuff brought from the bottom consists chiefly of mud and gravel. This is not only a useful operation for deepening and preserving the navigation, but the stuff itself is sold to good advantage, as ballast for shipping. To such an extent is this carried that the colliers, or shipping from London to Newcastle, have raised ballast-hills in the neighbourhood of Shields, which, from their vast extent, have become objects of no small curiosity.

Another kind of dredging-machine, formerly much employed in the river Clyde, and other parts of Britain, consists of a large plate of iron, about four feet long and eighteen inches deep, and sharpened on the under edge. To each end of this plate of iron a plank of hard wood is fixed to tenons cut in the iron, the sharpened edge of iron projecting about four inches below the wooden sides. The whole forms something like a box, without top or bottom, eighteen inches deep at the one end and ten inches at the other. From the two extreme points of the wood a chain is fixed, for attaching the principal working rope or chain. In order to put the machine in motion, it is requisite to have a punt moored on each bank of the river directly opposite, and on each of these punts a capstan, or windlass, the one for drawing across the empty dredge, and the other for bringing it back. In the course of its passage the dredge is generally filled, and by means of the capstan it is drawn so high up that men at low water can remove the stuff with shovels. Where the shiftings are not frequent a capstan or windlass may be placed on the bank of a river, and the operation performed as before. But as this method is very tedious where dredging of great extent is required, it is now little used except in levelling foundations under water, for which it is well adapted, if the material is soft sand or mud.

But by far the most complete and effective dredging-machines are those which consist of an endless chain of buckets, ascending full and descending empty, each bucket collecting its cargo of stuff when at the bottom of the river. Such machines, when first introduced, were worked by men, but when the principles on which such machines act were more fully ascertained, horses were employed, who worked round a covered gin-trap, or circular path within the boat. Still more recently, when the importance of substituting steam-power for that of horses and men has been so clearly seen, steam-dredging machines have been constructed, and are now used in various parts of Britain.

One of the most complete dredging-machines ever constructed was made for the harbour of Aberdeen a few years ago. The vessel and the steam-engine, as well as the dredging apparatus, were all made expressly for the purpose, and for each other. The vessel is ninety feet long, and twenty-two broad, with a longitudinal opening along the middle of the ship, extending more than half its length, being fifty-four feet long, and intended for the reception of the frame containing the buckets. The vessel draws only four feet of water, but the bucket-frame can be lowered so as to dredge at a depth of fifteen feet. One half of the length of the vessel, as just observed, has a longitudinal *slit* or opening through which the buckets descend into the water, and the other half contains the steam-engine by which the buckets are worked. The bucket-frame is a kind of ladder, placed in a diagonal direction, through the middle line of the ship, part being above, and part dipping into the water. The frame is fifty-two feet in length, each side being of one entire piece of oak timber. The two ends of this frame serve as supports for a chain to which the buckets are attached. The links of the chain weigh, some forty-four, and others eighty-four pounds each. The buckets are twenty-one inches deep, twenty-six inches wide in one direction, and from fourteen to nineteen in the other. The operation, then, is this. The steam-engine sets some machinery in motion, which moves the chain to which the buckets are attached, and the buckets are thus drawn alternately up and down, having their mouths or open top uppermost when ascending, and lowermost when descending. The length of the chain is so regulated that the buckets may just dip or scrape into the mud at the bottom of the harbour, and the mud, when hauled up, is emptied into barges placed alongside the vessel. The expense of this apparatus in its complete state was nearly five thousand pounds.

In most bucket-dredging machines there are two series of buckets, one on each side of the vessel, but the mode of operation is nearly the same in both cases, the chain of buckets in each being arranged in an inclined position from head to stern of the vessel, and the buckets alternately ascending and descending, full in the former position and empty in the latter.



THE SPOON DREDGING MACHINE.

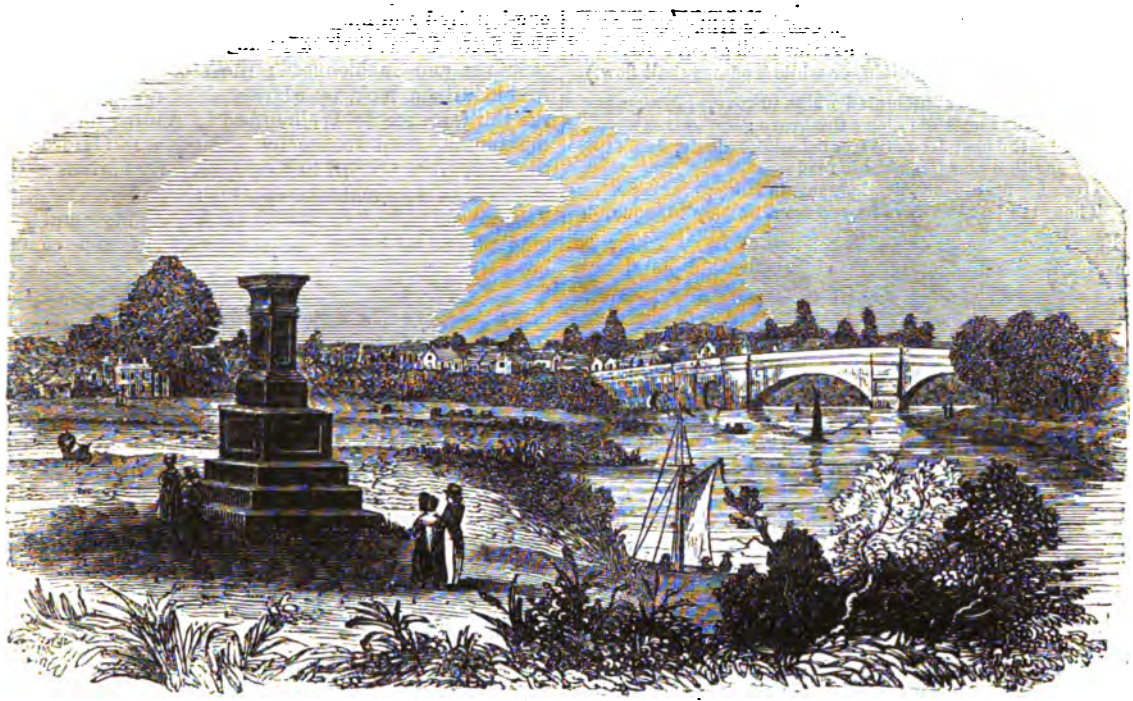
LONDON: Published by JOHN W. PARKER, WEST STRAND, and sold by all Booksellers.

THE

Saturday Magazine.

No. 586. AUGUST 21ST, 1841. Price One Penny.

THE BANKS OF THE THAMES. VI.



STAINES' STONE.

We now approach that part of the Thames at which it receives the waters of the river Colne, about two miles above the town of Staines. This river rises in Hertfordshire, not far from St. Albans, and after passing by Watford, becomes the boundary between the counties of Middlesex and Buckingham; continuing its course through Uxbridge to the Thames.

The Thames then flows between Egham and Staines, the former being on the Surrey and the latter on the Middlesex side; Egham is a large village, in the north-west corner of the county of Surrey. It consists of one street, nearly a mile in length. The church, apparently of considerable antiquity, has externally but a mean appearance: it is built of stone, with a modern mixture of brick, and is covered with a white stucco. On the north side of the street is a range of alms-houses, founded in 1706, by Mr. Henry Strode, merchant of London, for six men and six women, who must be sixty years of age, and have been parishioners of Egham twenty years without receiving any parochial relief. The centre of this building, which exhibits an appearance of neatness and comfort, is the residence of a schoolmaster, who has a salary for educating twenty poor boys of Egham. This village furnishes a remarkable instance of the effect which changes in the modes of travelling will often effect in the prosperity of particular places. A topographical writer, in describing Egham as it was a few years ago, says:—"This place has many respectable inns, and seems to be in a thriving state, the principal source of its prosperity being derived from its situation as a great thoroughfare from the metropolis to the west and south of the kingdom." This account is no longer true. The communication by railway from London to the south-western parts of England has removed almost the entire stage coach trade from Egham, and caused the closing of many of the inns.

Northward of Egham, between it and the Thames, is Runnymead, which will ever be celebrated in the history of this country as the spot where the assembled barons, in 1215, compelled King John, who had in vain resorted to the most criminal prevarications, to grant what is emphatically denominated *Magna Charta*, the Great Charter of the liberties of England. Here his assent was extorted; but the treaty is said to have been actually signed on an island in the Thames still called Charter Island, and included in the parish called Wraysbury, in Buckinghamshire. It was suggested some years ago, that a pillar should be erected on this spot, to commemorate an event which has had so marked an effect in the English character and constitution; but we believe that nothing of the kind has been put in execution.

Westward of Egham is an elevation called Cooper's Hill, which has acquired a certain degree of celebrity from a poem of the same name by Sir John Denham. This poem was written about two centuries ago, and appears to be a description of objects seen from the hill, rather than of the hill itself. Cooper's Hill, the professed subject of the poem, is not mentioned by name; neither is any account given of its situation, produce, or history; but, as has been ingeniously observed, it serves, like the stand of a telescope, merely as a convenience for viewing other objects. Dr. Johnson, speaking of this poem, said:—

Cooper's Hill is the work that confers upon Denham the rank and dignity of an original author. He seems to have

been, at least among us, the author of a species of composition that may be termed local poetry, of which the fundamental subject is some particular landscape, to be poetically described, with the addition of such embellishments as may be supplied by historical retrospection, or incidental meditation. To trace a new species of poetry, has in itself a very high claim to praise; and its praise is yet more, when it is apparently copied by Garth and Pope.

The associations connected with this spot are rendered perennial by the lines of Pope:—

Bear me, oh! bear me to sequestered scenes,
To bow'ry mazes and surrounding greens;
To Thames's bank, which fragrant breezes fill,
Or where the Muses sport on Cooper's Hill.
(On Cooper's Hill eternal wreaths shall grow,
While lasts the mountain, or while Thames shall flow.)

I seem through consecrated walks to rove,
I hear soft music die along the grove:
Led by the sound I rove from shade to shade,
By god-like poets venerable made.
Here his first lays majestic Denham sung;
There the last numbers flowed from Cowley's tongue.

From Egham we cross the Thames by a bridge to the town of Staines. Staines Bridge is a handsome stone structure, erected in lieu of an earlier iron bridge with a single arch, which was not deemed safe. Staines is a market town, with about two thousand inhabitants. It has been much improved of late years, and consists principally of one wide street, containing some good houses, and terminating at the foot of the bridge. The church, dedicated to St. Mary, and originally erected in 1631 by Inigo Jones, has been recently rebuilt; it is a neat structure, with a square embattled tower; the interior, which is well arranged and handsomely fitted up, contains about three hundred and fifty free sittings.

Staines, or Stanes, as it was formerly called, is supposed to have derived its name from the Saxon word *stana* or stone, because, within its parochial limits, the stone has immemorially stood, which marks the extent of the city of London's western jurisdiction on the Thames. It stands on the banks of the river, at Colnediteh, at a small distance from the church. On the upper part of the stone, which is much decayed, is inscribed, "God preserve the city of London, A.D. 1280." This stone was, during the mayoralty of Sir Watkin Lewes, in the year 1781, placed on a new pedestal, whose inscription informs the reader that it was erected exactly over the spot where the old one formerly stood.

This stone marks a boundary, beyond which the conservancy of the Thames passes into other hands; and we take the present opportunity to offer a few explanatory remarks on this subject. There is a homely proverb, that "every body's business is nobody's business;" the truth of which would be soon shown if such a river as the Thames were left without definite arrangements being made for its conservancy. Before the year 1771, the navigation of the river was very imperfect. It was carried on in large barges of two hundred tons burden, drawing four feet water, passing downward by the force of the stream, and upwards by the tractive force of men or horses, walking on the banks. In some cases the barge was pulled along by twelve or fourteen horses, or by a gang of men varying from fifty to eighty. But in the year which we have mentioned, an act of parliament was passed for improving the navigation from the metropolis to Cricklade; and soon afterwards another act vested the jurisdiction of that part of the river between London and Staines in the corporation of the city of London, which has in consequence made considerable improvements, by the construction of towing-paths, locks, and other works. The jurisdiction of the corporation extends from Staines to the Crow-stone, near Southend, including part of the rivers Medway and Lea. It is the office of the lord mayor's deputy, the water-bailiff, to search for, and punish, all persons who infringe the laws made for the preservation of the river, and its fish; and in order to maintain the rights and privileges of the river, the lord mayor holds a court of conservancy eight times in the year, in the four counties of Middlesex, Surrey, Kent, and Essex.

With regard to the portion of the Thames above Staines, we shall avail ourselves of a pamphlet published a few years ago by Mr. Allunt of Henley. Whether any changes have occurred since then, we do not know; but we shall give the substance of the statement made by him. The upper portion of the Thames, extending from Staines to Lechlade in Gloucestershire, a distance of one hundred and nine miles, is divided into five districts; the first, from Staines Stone, to Boulter's lock, by Windsor and Maidenhead; the second, from thence to Mapledurham lock, by Marlow, Henley, and Reading; the third, thence by Wallingford to Shillingford bridge; the fourth, from thence by Abingdon to Oxford; and the fifth, from Oxford to Lechlade. By various acts of parliament, the management of these districts of the Thames is placed in the hands of disinterested commissioners, consisting of gentlemen of the counties bordering on the river, possessing 100*l.* a year real, or 3000*l.* personal estate. Six general meetings of these commissioners are annually held, at London, Windsor, Marlow, Reading, Wallingford, and Oxford. Empowered to raise by loans the sum of seventy-five thousand pounds, at an interest of five per cent., they have expended that and the annual surplus of the tolls, in making several pound-locks, mostly a hundred and twenty feet in length, by eighteen in width; and also in short side-cuts, situated in places where the river was formerly penned up for the purpose of working mills, or for fishing. Considerable sums have also been expended in making a convenient horse-towing path along the whole navigation, in ballasting the channel where necessary, and in other improvements, by which vessels are enabled to navigate without obstruction at the depth of three feet ten inches in all seasons. By these improvements and the judicious regulations adopted by the commissioners, the navigation was rendered to a certain degree safe and expeditious. The supply of water is generally abundant, from the many tributary streams flowing into the Thames. Barges usually go down the river at the rate of from twenty-five to thirty-five miles a day; and up from twenty to thirty miles. The tolls are three-pence per ton at each pound lock, or six shillings and nine-pence per ton for two hundred and eighteen miles; besides a toll of about two shillings per ton throughout to the weir-owners. The trade in the Thames has been sufficient to yield a sum large enough to keep the works in repair, and to permit a considerable amount to be expended in new works. This account was given before the age of railroads commenced; it is probable that many modifications have been produced in the amount of traffic along the upper course of the Thames.

We now leave Staines, and proceed in our tour down the river. Not far from this town, St. Ann's hill appears in a very conspicuous and elevated situation, offering a picturesque object at various bends of the river. Laleham soon appears in sight; a spot famed for the entertainment it affords to the lovers of angling. The river at Laleham narrows considerably, and about the shallows the water is beautifully transparent. Here the tranquillity of the scenery, the various objects perpetually gliding on the stream, and groups of cattle from the adjacent meadows drinking at the river, all contribute to form a picturesque assemblage.

From Laleham, the river proceeds in a course nearly due south, for a distance of about three miles, to Chertsey, a pretty market-town on the Surrey side of the river. Chertsey formerly derived consequence from its abbey, which ranked among the more considerable monastic institutions of the country; and possessed

annual revenues valued at the time of the dissolution at about seven hundred pounds. Some of the outer walls are the only remains of this once celebrated edifice. On the site of the abbey, (which once contained the body of Henry the Sixth,) Sir Henry Carew, master of the buck-hounds to Charles the Second, built a handsome mansion, called the Abbey-house. Across the Thames at Chertsey is a bridge of seven arches, built of Purbeck stone, at an expense of about thirteen thousand pounds.

The poet Cowley resided in Chertsey some time, and died in what was called the Porch-house. He retired to this quiet spot from disgust, wearied out with the vexatious attendance upon a court, and the fatigues of business. In this retreat he vainly flattered himself with meeting uninterrupted harmony; but the following letter, written by him to Dr. Spratt soon after his arrival at his new abode, speaks of a mind by no means satisfied and at ease.

Chertsey, May 21, 1665.

The first night that I came hither I caught so great a cold, with a defluxion of rheum, as made me keep my chamber ten days. And, two days after, had such a bruise on my ribs with a fall, that I am yet unable to move or turn myself in my bed. This is my personal fortune here to begin with. And, besides, I can get no money from my tenants, and have my meadows eaten up every night by cattle put in by my neighbours. What this signifies, or may come to in time, God knows; if it be ominous, it can end in nothing less than hanging. Another misfortune has been, and stranger than all the rest, that you have broke your word with me, and failed to come.

But we must now leave Cowley and his troubles; and will, in the next paper, proceed on our tour from the town of Chertsey eastward.

GARDEN HERBS.

Basil.

According to fabulous history this plant originated from the death of Ocimus, who first ordained the combats in honour of Pallas, and being killed by Cyclodemas, a famous gladiator, was immediately metamorphosed into the plant which bears his name.

The Greeks called this plant ὠκιμον on account of quickness with which the seed germinates. In modern botany the term Ocymum is applied to a genus of labiate plants remarkable for the fragrance of their leaves which are used as an ingredient in savoury dishes, for which reason some of the species have been, from time immemorial, very generally cultivated. They are known in our gardens as *basils*, the name *basilium*, (from the Greek word for *a king*,) having been applied to common basil by the monkish writers on plants in allusion to its regal qualities.

Basil is a native of the south of Europe, as well as the East Indies and some parts of Africa: it also grows wild in Persia. There are many varieties, of which Gerard enumerates several. He says:—

Great garden basil is of two sorts, differing from one another in bigness. The first hath broad, thick and fat leaves, of a pleasant sweet smell, and of which some are here and there of a blackish red colour, somewhat snipped about the edges, not unlike the leaves of French mercury. The stalk groweth to the height of half a cubit, dividing itself into divers branches, whereupon do stand small and base flowers, sometimes whitish, and often tending to dark purple. The root is thready, and drieth at the approach of winter.

Citron basil is very like unto the former, but is altogether lesser. The whole plant is of a most odoriferous smell, not unlike the smell of a lemon or citron, whereof it took his surname.

Bush basil is a low and base plant, having a thready root from which rise up many small and tender stalks, branched into divers arms or boughs, whereupon are placed many little leaves, lesser than those of pennyroyal. The whole plant is of a most pleasing sweet smell.

Indian basil sends up a stalk a foot or more high, four-square, and of a purple colour, set at each joint with two leaves, and out of their bosoms come little branches: the largest leaves are some two inches broad, and some three long, growing upon long stalks, and deeply cut in about the edges, being also thick, fat and juicy, and either of a dark purple colour, or else spotted with more or less such coloured spots. The tops of the branches end in spokie tufts of white flowers, with purple veins running alongst them. The seed is round, black and large. The plant perishes every year as soon as it hath perfected the seed.

This harmless and fragrant herb was the object of many superstitious prejudices among the ancients, and of much fierce debate among the old herbalists. The ancients were of opinion that if basil were pounded and put under a stone, it would breed serpents. Instead of putting this marvellous quality to the test, they continued to decry the use of the herb; and when it was transplanted into this country, our herbalists finding the climate too cold for serpents, transformed them into worms and maggots, which, as it is gravely stated, this herb will engender if it be only chewed and put into the sun.

Chrysippus, two hundred years B.C., condemned basil as being hurtful to the stomach, an enemy to the sight, and a robber of the wits. Diodorus stated, that by eating this herb, cutaneous insects are produced. Hollerus relates, that an Italian by frequently smelling this herb, bred a scorpion in his brain. According to Galen, "basil is hot in the second degree; but it hath adjoined with it a superfluous moisture, by reason whereof it should not be taken inwardly, but being applied outwardly, it is good to digest or distribute, and to concoct." Galen says further, that basil was eaten by many persons in his time, being corrected with oil and vinegar.

Gerard recommends the juice of basil to be drunk in wine of Chios, or strong sack, as a remedy for the headache. "Mixed with fine meal of parched barley, oil of roses, and vinegar, it is good against inflammations and the sting of venomous beasts. They of Africa do affirm that they who are stung of the scorpion, and have eaten of it, shall feel no pain at all."

Basil leaves a pleasant smell when rubbed with the hand; and it was formerly said that the hand of a fair lady made it thrive. Farmers in the times of Queen Mary and Queen Elizabeth planted it in pots to offer to their landladies or others who visited the farm. Tusser says:—

> Fine Basil desireth it may be his lot
> To grow as a gilleflower, trim in a pot:
> That ladies and gentiles, for whom you do serve,
> May help her as needeth, poore life to preserve.

In our gardens basil is treated as a tender annual. It is raised in the spring in a hot-bed, and turned into a warm border when the summer is so far advanced that frosty nights are no longer to be feared. A slight frost would be instantly fatal to this plant.

The history of basil may be thus briefly summed up. *First*:—The ancients regarded it as a most viruulent and dangerous plant. *Secondly*,—The old herbalists were divided in opinion. Culpeper says:—"Away to Dr. Reason went I, who told me that basil was an herb of Mars, and under the Scorpion, and perhaps, therefore, called basilicon, and it is no marvel if it carry a kind of virulent quality with it." Gerard agrees with Simeon Zethy that, "the smell of this plant is good for the heart and for the head: that the seed cureth the infirmities of the heart, taketh away sorrowfulness which cometh of melancholy, and maketh a man merry and glad." *Thirdly*,—Modern botanists regard basil as a simple garden herb, useful to impart flavour to soups and sauces.

Borage.

The common borage is often taken as the type of Borragineæ, the Borage family, a natural order of Dicotyledo-

nous plants, containing about thirty genera, and nearly three hundred species. This herb represents not only the peculiarities of structure, but sensible properties of this order: all the known species have an insipid juice, and their surface is covered with stiff, white hairs, which impart a peculiar roughness or asperity to the skin, on which account these plants were formerly called *asperifoliæ*, or rough-leaved.

Borage is said to be derived from the Latin words, *cor* and *ago*, because the old herbalists used it "to comfort the *heart* and spirits of those that are in a consumption or troubled with often swoonings, or passions of the *heart*." The ancient Romans called it *Buglossus*, from the Greek Βουγλωσσος, because the leaf is like the tongue of an ox. The French call it *langue de bœuf*, and the name Bugloss is not uncommon in England. *Euphrosynon* is also an ancient name for it, because when put into a cup of wine it was said to make those who drank of it merry,—an effect which we should be disposed to attribute rather to the wine than the borage.

Borage is said to have been introduced into England from Aleppo, but it grows so freely in this country that many writers suppose it to be indigenous. The herb is succulent and mucilaginous, and when bruised yields a very faint odour. Exhilarating qualities were formerly attaibuted to it, and it was reckoned one of the four cordial flowers, the other three being alkanet, roses, and violets. It has been recommended as a medicine of great efficacy in pleurisy and inflammatory fever, and as such is sometimes used in France in the form of a syrup prepared from the leaves. The juice of borage yields nitre, and on this account perhaps its medicinal virtues are considered salutary. Water distilled from both the leaves and flowers of the plant was formerly a favourite medicine, but is very little regarded in modern practice. Gerard says that many things can be made from borage, "and be used everywhere for the comfort of the heart, for the driving away of sorrowe and increasing the joie of the mind. Sirrupe made of the flowers comforteth the heart, purgeth melancholie, quieteth the phrenticke or lunaticke person. The leaves eaten raw do engender goode bloode, and when boiled in honey and water they cure hoarseness."

Lord Bacon observes that—

The leaf of the borage hath an excellent spirit to repress the fuliginous vapour of dusky melancholy, and so to cure madness: but nevertheless, if the leaf be infused long it yieldeth forth but a raw substance, of no virtue; but if the borage stay a small time, and be often changed with fresh, it will make a sovereign drink for melancholy passions.

There is an old Latin verse on this plant—

Ego borago gaudia semper ago—

which has been thus paraphrased:—

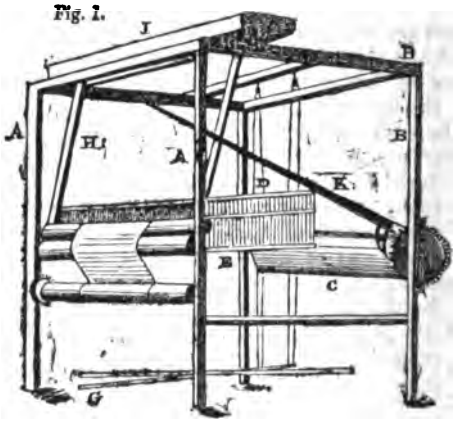
I, Borage, bring courage.

This herb is now almost entirely neglected in England, although it is sometimes used with wine, water, lemon, and sugar as an ingredient in the favourite old English drink called "cool tankard." The plant has an odour like cucumber, and, in consequence of the nitre contained in it, communicates a peculiar coolness and flavour to any beverage in which it is steeped.

He who from out the dull dark earth
Can bid the red rose take its birth,
And from the blind unopened mine
Call forth the gem to live and shine,
He, by some powerful, heavenly law,
Will from our dark condition draw
Enjoyment endless, lovely light,
And give us courage for the fight,
Give strength through every ill to spring,
And hope, which conquers everything.—*f*

WIRE-GAUZE.

Fig. 1.



In our recent papers on Wire-drawing we briefly explained the mode in which a bar of iron or other metal is gradually reduced in diameter, till the form of wire is produced. We now proceed to show how wire, thus produced, may be made into a net, a cloth, a gauze, or extended material consisting of meshes.

This kind of manufacture assumes one of two forms, according to circumstances. If a fence, grating, or net be required, in which the meshes are as much as an inch in diameter, or are otherwise than rectangular in shape, the wire is twisted or plaited into the required form by hand; but if the meshes are smaller in size, the process is effected by means of a loom, in many respects resembling the cloth-weaver's hand-loom.

In the annexed cut (fig. 1,) ABBA represents the frame of the loom, by which all the parts are held together, and which is generally about five feet high, four feet deep, and three wide, but occasionally much larger. C is a beam or wooden roller, on the surface of which has been turned a number of deep grooves, into which the wires to form the "warp" are wound, each groove receiving a greater or less number of wires, according to the required fineness of the wire-cloth or gauze. These wires pass through vertical openings in a kind of frame-work, D E, and then pass over a roller in front of the frame. As the cloth becomes woven it is wound on another roller situated beneath the one just referred to. The apparatus at D E consists of two sets, or four frames of vertical wires, each about as thick as a common knitting-pin, and in the middle of each of these wires a small hole is punched, through which one wire of the warp is passed. Thus each wire of the warp has a separate perforation appropriated to itself. These frames are suspended, two and two together, by cords passing over the top of the loom, or else round pulleys fixed to an upper beam. F G are two treadles, by which the weaver draws down the frames alternately, during the process of weaving.

The warp-wires being thus arranged in a parallel horizontal layer from the beam to the front roller, it is evident that, by pressing down the treadles alternately, the warp-wires in the loop-holes of the frames D E will be alternately elevated and depressed, so as to form a passage, under some of the wires and above others, for a shuttle containing a bobbin of wire. As the shuttle passes in this way across the warp, it leaves one thread of "weft" behind it, which is immediately driven up close to the weft-thread immediately preceding it, by an instrument called the *reed*, which swings on the lower part of the lever H. The warp-wires being reversed in position by the action of the treadles, the layer, row, or set of wires, which was before elevated, is now depressed, and the depressed wires elevated, and another weft-thread is similarly thrown across is the shuttle, and driven up by means of the reed.

The instrument last spoken of, *i. e.* the reed, is com-

posed of small bars of steel wire, set as close as possible, so as only just to admit the warp-wires between them, and the swing-frame H, to which it is attached, is balanced and aided in its oscillations by a heavy movable piece of timber I, resting on pivots on the upper part of the frame.

As the work advances the woven cloth is wound on the lower front roller or beam by moving the beam C round a little, by means of a ratchet wheel at one end, and the connecting lever K. Thus the weaving proceeds, thread after thread of weft being thrown across the warp, the two sets of warp-wires being alternately elevated and depressed.

The shuttles are of two kinds, according to the thickness of the wire employed. In general, the form is that represented at A in the annexed cut (fig. 2,) differing

Fig. 2.

but little from the linen-weaver's shuttle, as formerly used. It is a kind of thick blunt needle, similar at both ends, and made of box-wood. It is about six inches in length, and has an aperture in the middle for the insertion of a bobbin or pirn. This bobbin is a little cylinder rotating on its axis by means of pivots at the ends, and the wire being wound on the bobbin, the rotation causes it to be given off as wanted by the weaver. When the wire is very thick it does not leave the bobbin with sufficient ease and celerity, and in that case it is wound on a kind of notched stick, represented at B, and then driven across the warp-threads.

Power-loom weaving has been applied to wire-cloth, as well as to fibrous materials, such as linen, cotton, and woollen, but the demand is not sufficiently extensive to render this application of steam power of high importance.

The reader will readily call to mind the many purposes for which twisted wire is applied, under the general name of "wire-work." Of those kinds which are woven, the coarser specimens are used for fences, pheasantries, lanterns, &c., and the finer for flour-dressing machines, paper-mill washers, fine sieves, meat-safes, dish-covers, window-blinds, and a variety of other purposes.

When the meshes are very minute, the fabric is termed *wire gauze*,—a substance which has become interesting since the curious discovery of Sir H. Davy, that such gauze is incapable of permitting the passage of flame.

The experiment may be performed with a piece of wire-gauze, about nine inches square, and of such fineness as to contain about thirty meshes in the square inch. If we bring the gauze gradually down upon the flame of a candle, or of a spirit-lamp, an appearance will be presented as shown in fig. 3. The flame does not pass through the gauze, but only the hot inflammable vapour of the flame, which may be ignited at the upper surface, as shown in fig. 4.

If two pieces of paper be attached, one to each surface of the gauze, and flame be applied below, the under piece will of course be consumed; but the upper piece will remain uninjured by the flame, so long as the wire-gauze remains below red-heat. If, instead of paper, we place camphor on the upper surface of the gauze, the camphor will not take fire there; but having melted, will pass through the gauze, and burn on the under surface only. If gunpowder be sprinkled on the gauze, it will not ignite until the wire is hot enough for the purpose. When Lycopodium is projected on flame it instantly breaks out into a blaze; but if this substance be projected on the wire-gauze, it merely blackens, and does not take fire at all.

We see, then, from these experiments, that wire-gauze is a barrier to the progress of combustion, and that it intercepts heat as well as flame. If we place a piece of cotton-stuff upon the gauze, and bring the latter down upon a flame, the cotton will remain uninjured until the wire gets red-hot:—the flame will then pass through and consume the stuff. We see then that wire-gauze ceases to intercept flame as soon as by increase of temperature it ceases to intercept heat.

Fig. 3.

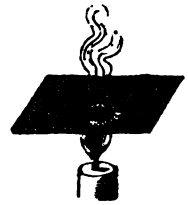
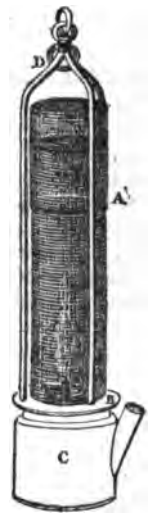


Fig. 4.

Fig. 5.



Now since the wire-gauze is formed of a good conducting substance, so much heat is abstracted from the flame, that the vapour which passes through the meshes is not hot enough to appear as flame; but when the gauze is red-hot, sufficient heat passes through to kindle the vapour, and then the flame is both below and above the gauze; in which case the latter only bisects the flame as in fig. 4.

The remarkable property of wire-gauze, was applied by Sir H. Davy to the construction of the miner's safety lamp. Coal-mines are frequently infested with an inflammable compound of hydrogen and carbon called carburetted hydrogen, or by the miners, *fire-damp*. This gas by mingling with the atmospheric air becomes explosive; so that the means whereby the miner dispelled the darkness of his gloomy workshop often produced his destruction. To remedy the frequent disasters thus occasioned, Sir H. Davy invented a lamp, the flame of which is entirely surrounded by a hollow cylinder of wire-gauze A, (fig 5,) with a double top, carefully fastened, by doubling over, to the brass rim B, which screws on to the lamp C. The whole is protected and rendered portable by the frame and ring D. It is obvious that the flame of the lamp cannot penetrate from within to the surrounding medium, in consequence of the cooling power of the metallic tissue.

Another humane application of wire-gauze was made by the Chevalier Aldini, who applied this substance, together with other badly conducting materials, as a protection against fire. The incombustible parts of dress for covering the body, arms, and legs, he formed out of strong cloth, previously steeped in an alum solution; and the parts intended for the head were made of asbestos. The head-dress was a large cap entirely covering the head down to the neck, with proper apertures for the eyes, nostrils, and mouth. To this dress was superadded a wire-gauze dress consisting of a cap, a cuirass, a covering for the body and thighs; a pair of boots of double wire-gauze, and a shield.

Numerous experiments were made to show the efficacy of these defences in resisting flame. Among many others we may mention those exhibited to a committee of the Academy of Sciences at Paris. Two parallel rows of straw and brushwood, supported by iron frames, were placed three feet apart and extended thirty feet in length

When this mass was ignited, the spectators were obliged to move to a distance of nine or ten yards to avoid the heat. The flames appeared to fill up the whole space between the rows, and rose to the height of about ten feet. When the flames were most fierce, six firemen, clad in the incombustible dresses, marched many times at a slow pace along the fiery passage. One of the men carried behind him a child eight years old in a wicker basket covered with metallic gauze.

A still more striking exhibition was made in 1829 in the yard of the barracks of Saint Gervais. Two towers were erected, each two stories high, and were surrounded with faggots and straw, and ignited. The firemen entered the towers with impunity, and one of them with his child in the wire-gauze basket rushed into the flames which were raging to the height of eight yards. This violent combustion, accompanied by a thick black smoke, hid him from the view of the spectators, and he remained so long invisible that serious apprehensions were felt for his safety; but he at length appeared, uninjured, and exulting in having braved the terrors of this fiery gulf.

It is remarkable that, in these trials, the firemen were able to breathe in the midst of the flames without difficulty. This effect arises from the circumstance that much of the heat is intercepted by the wire-gauze in the passage of the heated air to the lungs; and also from the remarkable power of the human body to resist great heat, and of the lungs to breathe very hot air.

LIKE some vast flood, unbounded, fierce, and strong,
His nature leads ungoverned man along,
Like mighty bulwarks made to stem that tide,
The laws are formed, and placed on every side;
Whene'er it breaks the bonds by these decreed,
New statutes rise, and stronger laws succeed;
More and more gentle grows the dying stream,
More and more strong the rising bulwarks seem;
Till, like a miner working sure and slow,
Luxury creeps on, and ruins all below!
The basis sinks, the ample piles decay,
The stately fabric shakes and falls away;
Primeval want and ignorance come on,
But Freedom, that exalts the savage state, is gone.—
CRABBE.

PRINTING was invented by a soldier, gunpowder by a monk, and several branches of the clothing trade by a bishop; this last is said, however, agreeably to the vulgar notions concerning Bishop Blaze, the patron saint of the woolcombers. But he obtained that honour, not on account of any improvements he made in the trade, but because he suffered martyrdom by having his flesh torn by carding irons.

MELANCHOLY.—Of the melancholy of common life there are two species that have but little resemblance. There is a sullen gloom which disposes to unkindness and every bad passion; a fretfulness in all the daily and hourly intercourse of familiar life, which, if it weary at last the assiduities of friendship, sees only the neglect which has forced and not the perversity of humour which gave occasion to it, and soon learns to hate, therefore, what it considers as ingratitude and injustice; or which, if friendship be still assiduous as before, sees in these very assiduities, a proof, not of the strength of that affection which has forgotten the acrimony to soothe the supposed uneasiness which gave it rise, but a proof that there has been no offensive acrimony to be forgotten, and persists therefore in every peevish caprice till the domestic tyranny becomes habitual. This melancholy temper, so poisonous to the happiness, not of the individual only, but of all those who are within the circle of its influence, and who feel their misery the more because it may perhaps arise from one whom they strive, and vainly strive to love, is the temper of a vulgar mind. But there is a melancholy of a gentler species, a melancholy which as it arises, in a great measure, from a view of the sufferings of man, disposes to a warmer love of man this sufferer, and which is almost as essential to the finer emotions of virtue as it is to the nicer sensibilities of poetic genius.—DR. THOMAS BROWN.

TRANSLATION OF SOME LINES WRITTEN IN LATIN BY LADY JANE GREY.

ENDLESS all malice if our God is nigh,
Fruitless all pains if He his help deny;
Patient I pass these gloomy hours away,
And wait the morning of eternal day.

IF ever any book was truly poetical,—if ever any abounded with poetry, it is *Paradise Lost*. What an expansion of facts from a small seed of history! What worlds are invented,—what embellishments of nature upon what our senses present us with! Divine things are more nobly, more divinely, represented to the imagination than by any other poem; a more beautiful idea is given of Nature than any poet has pretended to,—Nature—as just come out of the hand of God, in all its virgin loveliness, glory, and purity; and the human race is shown, not, as Homer's, more gigantic, more robust, more valiant, but without comparison more truly amiable, more so than by the pictures and statues of the greatest masters. And all these sublime ideas are conveyed to us in the most effectual and engaging manner. The mind of the reader is tempered and prepared by pleasure: it is drawn and allured, it is awakened and invigorated, to receive such impressions as the poet intended to give it. The poem opens the fountains of knowledge, piety, and virtue; and pours along full streams of peace, comfort, and joy, to such as can penetrate the true sense of the writer, and obediently listen to his song.—RICHARDSON.

CIRCLES are praised, not that abound
In largeness, but th' exactly round;
Such praise they merit, who excel,
Not in wide spheres, but acting well.—?

THE common imagination that we have of Paradise on the other side of death, is, that of a loftly aërial region, where the inmates float in ether, or are mysteriously suspended upon nothing—where all the warm and sensible accompaniments which give such an expression of strength, and life, and colouring, to our present habitation, are attenuated into a sort of spiritual element, that is meagre, and imperceptible, and utterly uninviting to the eye of mortals here below—where every vestige of materialism is done away, and nothing left but certain unearthly scenes that have no power of allurement, and certain unearthly ecstacies, with which it is felt impossible to sympathize. The holders of this imagination forget all the while that really there is no essential connexion between materialism and sin—that the world which we now inhabit, had all the amplitude and solidity of its present materialism before sin entered into it—that God so far, on that account, from looking slightly upon it, after it had received the last touch of his creating hand, reviewed the earth, and the waters, and the firmament, and all the green herbage, with the living creatures, and the man whom He had raised in dominion over them, and He saw everything that He had made, and, behold, it was all very good. They forget that on the birth of materialism, when it stood out in the freshness of those glories which the great Architect of Nature had impressed upon it, that then "the morning stars sung together, and all the sons of God shouted for joy." They forgot the appeals that are made everywhere in the Bible to this material workmanship—and how, from the face of these visible heavens, and the garniture of this earth that we tread upon, the greatness and the goodness of God are reflected on the view of his worshippers. No, my brethren, the object of the administration we sit under, is to extirpate sin, but it is not to sweep away materialism. By the convulsions of the last day, it may be shaken, and broken down from its present arrangements; and thrown into such fitful agitations, as that the whole of its existing framework shall fall to pieces; and with a heat so fervent as to melt its most solid elements, may it be utterly dissolved. And thus may the earth again become without form and void, but without one particle of its substance going into annihilation. Out of the ruins of this second chaos, may another heaven and another earth be made to arise; and a new materialism, with other aspects of magnificence and beauty, emerge from the wreck of this mighty transformation; and the world be peopled as before, with the varieties of material loveliness, and space be again lighted up into a firmament of material splendour.—DR. CHALMERS.

RURAL SPORTS FOR THE MONTHS.

AUGUST.

Now westlin winds, and slaught'ring guns
Bring autumn's pleasant weather;
The moorcock springs, on whirring wings,
Amang the blooming heather.

THE sport which is eagerly anticipated and vigorously pursued by our northern neighbours at this season of the year is grouse shooting. On the extensive moors and dry central mountains of Scotland red grouse especially abound, finding cover and protection from their enemies in the wide-spread carpet of heather, and being concealed from observation by their similarity of colour with that of their place of shelter. The Heath, which is so common in the northern parts of the kingdom that our moors and mountain sides are completely empurpled with its blossoms, is a most valuable plant, and admirably adapted for the situations in which it is found. Multitudes of birds find sustenance in the tender buds and numerous seeds; while to the poor this plant affords a convenient substitute for more expensive fuel. On the slopes and flats where the heath is of considerable length, the red grouse is sure to be abundant, but so difficult is it to raise them from their cover when the season has been unfavourable, and they are not in good feather, that we are told that "one who has little knowledge of the moors may wander for days, in the places where they are most abundant, and not see a single bird."

Scotland is undoubtedly superior to every other part of Great Britain for the breeding and rearing of grouse, yet there are other localities where they are, or have been found. Black grouse were formerly common in the New Forest in Hampshire, and in some parts of Derbyshire, Devonshire, and Staffordshire, but red grouse were more rarely found, and are probably not to be met with in any one of those counties at the present time. The heights and moors of England, especially of the southern parts, are deficient in cover and in food, and are not therefore adapted for the protection of these birds. In Yorkshire they are to be met with in tolerable abundance, but the ravages of the lead miners have greatly lessened their numbers. These men act in concert, and are not easily hindered or restrained from their pursuit. According to Mr. Blaine they go from ten to twenty in a body, marching in a line from forty to sixty yards' distance from each other, and as they are excellent walkers, and usually expert shooters, they destroy a vast number of birds, especially as they generally begin their marauding before the legal time. They also take other advantages, for certain houses of call are ready to receive the birds and to dispatch them by coach to London, or by horse-loads to the large provincial towns or watering-places on the coast. The system of plunder is therefore complete; and the sporting, as it regards grouse, is in a great measure annihilated.

English grouse shooters usually proceed towards the northern counties from Staffordshire to the Tweed, or from Whitby to Whitehaven, but the poaching propensities of the miners, as above noticed, have left some districts, once abounding in game, now nearly destitute of it. Among the most esteemed localities for this sport we may mention Kirby Lonsdale, Brough, Bowes, Sedbergh, Kirkby Stephen, and the old Spittal. Leaving our readers to seek for information concerning these places in professedly sporting publications, we proceed to notice the grouse shooting of Ireland and Scotland.

The numbers of grouse in Ireland are few when compared with those of England and Scotland. A sportsman tells us that he saw more of them on the mountains about Langholm in Scotland in one day, than he ever saw in Ireland in twenty, although he has visited the best preserved mountains of the latter country. These are on the south side of the great Galty Mountains, near Michells' Town in the counties of Cork, Limerick, and Tipperary, and are considered to be the best for grousing in Ireland. Enveloped by these mountains is a tract of country belonging to the Earl of Kingston, celebrated among others for the abundance of different kinds of game to be found on it, and especially of grouse. The Kerry, Wicklow, Clogheen, Nenagh, and all the north country mountains, are likewise said to have plenty of grouse on them, and to be in general well-preserved.

In the Highlands of Scotland grouse shooting is so eagerly followed, that the lairds are enabled to exact considerable sums from sportsmen by way of rent for their shooting quarters during the season. The distance, and the expenses connected with a journey to the Highlands do not deter a considerable number of persons from undertaking it, for the shooting of red grouse is one of the highest marks of the sportsman's ambition. This sport commences by law on the 12th of August, some days before the shooting of black grouse, and in setting out to the moors, the grouser is careful to provide himself well with all the requisite materials, since the distance of the shooting locality from places where he can be re-supplied is generally great. The safest plan therefore to prevent disappointment is to take duplicates of all the materials. "We rented some grousing grounds," says Blaine, "near Brough in Westmoreland, the ascents to some of which were so precipitous, that we could only make our way up the gullies and water-courses for more than three miles to our point. As we were too enthusiastic in the sport, particularly in the first part of the season, not to be every-day engaged in it, we employed a mule in carrying us up to our ground; and the same plan we would strongly recommend to other sportsmen thus situated; for mules, it is well known, are hardy and remarkably safe."

The heavy mist so frequent in mountainous regions is a great drawback to this sport, it is also of little avail to beat the moors in the heat of the day, so that success in grousing may be considered very precarious. Perhaps it is mainly owing to the risk and uncertainty connected with the sport, that it is so highly esteemed and zealously practised.

The red grouse is exclusively confined to the British Islands, and has never been found on any part of the Continent. It is fifteen inches long, and weighs about nineteen ounces, being a little larger than the ptarmigan, though the difference, except in the length of the wings, is inconsiderable. The bill is black; the eyes hazel; the nostrils shaded with small red and black feathers; at the base of the lower bill there is a white spot on each side; the throat is red; each eye is arched with a large naked spot; the body is beautifully mottled with deep red and black, which gives it the appearance of tortoise-shell; the breast and belly are of a purplish hue, crossed with small dusky lines; the tail consists of sixteen feathers of equal lengths, the four middlemost barred with red, the others black; the quills are dusky; the legs are clothed with soft white feathers down to the claws, which are strong, and of a light colour. The female is somewhat less: the naked skin above each eye is not so conspicuous, and the colours of its plumage, in general, much lighter than those of the male.

The red grouse (*Tetrao Scoticus*) belongs to a sub-genus of the order *Gallinidæ*. It appears to have been unknown to Linnæus, while Gmelin regarded it as a variety of the ptarmigan. The food of this bird consists of mountain and bog-berries, and the young shoots of heath. It has been remarked that in cultivated districts, a great change has taken place in the habits of the grouse, and instead of seeking a precarious subsistence on the moors during severe weather, they migrate towards the lower grounds, where hundreds crowd to the corn-sheaves; and as the grain there remains out a considerable portion of the winter, so they escape starvation even in the worst seasons. The female lays from five to ten eggs early in the spring, in

a rude nest on the ground, and is remarkable for care and attention to her young. She resolutely fights their battles against the birds of prey and the vermin that attack them, nor is the male bird neglectful of his offspring. In order to secure the flight of the *cheepers*, (as young grouse are called,) both parents will practise such manœuvres as may best divert the shooter's attention, so that we find a sportsman saying:—"The very self-devotion which makes the parents so ready a mark, by the lingering flight they make, in order to secure the retreat of their brood, should plead for them, especially when the cheepers are now almost arrived at maturity, and consequently are fit prey for the shooter."

Several instances are recorded of the grouse being reared in a domesticated state. A gentleman, residing at Green Mount, Tipperary, Ireland, is said to have kept two brace of grouse for several years, which were so tame that it was a common practice with their owner to bring the birds and his setters into the parlour together, and divert himself with seeing the dogs set: the birds did not pay the smallest attention to the dogs, or indicate the least wish to escape.

In concluding our notice of the sport for which the present month is distinguished we take the opportunity of expressing our regret that any reader of the *Saturday Magazine* should disapprove of the publication of our accounts of rural sports, on the ground that some of the incidents are calculated to justify and encourage cruel and unfeeling pursuits. The description of the several sports practised throughout our country is a mere description of *facts*, employed in this instance as a vehicle for conveying information respecting the animals pursued, and the localities which they inhabit. This was distinctly stated in our opening remarks, (to which we beg to refer our readers, Vol. XVIII., p. 38,) and we are not conscious of having departed from the plan originally laid down. In the description of the angler's sport, we have used the term "fascinating," in a way which, though it has excited the objections of a correspondent, we know to be strictly true. The artist and the admirer of nature have expatiated with delight on the scenes which in their days of angling they were led to explore, and which, but for that amusement, they might never have beheld. We perfectly agree with our correspondent, in his remark that such advantages as these may be attained by other and more rational means. In the article in question, while we have given the opinion of the honest Izaak Walton, to show what a person of mild and amiable disposition can say in defence of this sport, we have also given the satirical remarks of Sir Walter Scott, directed at such as would endeavour to prove that fishes are possessed of a very low degree of sensibility to pain.

For ourselves, we see but immaterial shades of difference, as far as it regards *cruelty*, in the several sports which have for their object the extinction of animal life, and we can therefore fully adopt the language of our favourite poet, when he says with respect to animals:—

> . . . . . If man's convenience, health,
> Or safety interfere, his rights and claims
> Are paramount, and must extinguish theirs.
> Else they are all—the meanest things that are,—
> As free to live, and to enjoy that life,
> As God was free to form them at the first,
> Who in His sovereign wisdom made them all.
>
> COWPER.

> TRUE, 'twas of old by God decreed
> That birds for man's support may bleed,
> His words to Noah: not so plain
> The license which those words contain,
> Nor know I well what records hold
> The license, in what court enrolled,
> To cut their lives for *pastime* short,
> Or of their sufferings make our *sport*.
> But most accordant to his word
> I deem it, that the needful bird
> Or beast should fall by those who smite
> For business, rather than delight.
> And surely most it bears the sign
> And likeness of the stamp divine;
> And sure 'tis most from semblance free
> And blame of wanton cruelty;
> And most accordant to the part
> Which suits the meek and feeling heart;
> Whom duty leads not on, that they
> Should turn from deeds of blood away,
> Nor on their victims' sufferings pore,
> Nor bathe unbid their hands in gore.
> HIM, who is merciful and kind
> To all his works, the thoughtful mind
> Most seeks by kindness to express:
> And "gentle heart loves gentleness*."
>
> MANT'S *British Months*.

RED GROUSE. *Tetrao Scoticus.*

* Chaucer.

I CAN conceive no office more noble than that of a Christian minister. The triumphs of successful legislation may adorn the statesmen—the laurels of conquest may wreathe proudly round the brow of the victor—but the Christian minister may boast of acquisitions more important than the one and more permanent than the other. He may be buried in an obscure and impoverished parish—his circle may be narrow—his enjoyments few—his relaxations sparing—but his name will be precious to those whom he has comforted in affliction, soothed in suffering, and cheered in death.—Nor is this all;—his memory will ever be a affectionately cherished by those who reverence in him the instrument of their eternal salvation.—ANONYMOUS.

BOOKS are the legacies that genius leaves to mankind, to be delivered down from generation to generation, as presents to the posterity of those who are yet unborn.—ADDISON.

ROUGH uncultivated ground, dismal to the eye, inspires peevishness and discontent: may not this be one cause of the harsh manners of savages?

A field richly ornamented, containing beautiful objects of various kinds, displays in full lustre the goodness of the Deity, and the ample provision He has made for our happiness. Ought not the spectator to be filled with gratitude to his Maker, and with benevolence to his fellow-creatures? Other fine arts may be perverted to excite irregular, and even vicious, emotions; but gardening, which inspires the purest and most refined pleasures, cannot fail to promote every good affection. The gaiety and harmony of mind it produces, inclining the spectator to communicate his satisfaction to others, and to make them happy as he is himself, tend naturally to establish in him a habit of humanity and benevolence.—LORD KAIMES.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 587. AUGUST 28TH, 1841. Price One Penny.

TURKEY AND THE TURKISH PROVINCES.

RUINED CARAVANSERAI AT HAFSA.

BULGARIA AND THE BULGARIANS.

BULGARIA, a province of European Turkey, owes its origin, like many other nations or tribes in the eastern parts of Europe, to an immigration of Tartar hordes, from the countries near the Caspian. There was a country called Great Bulgaria, on the confines of Asia and Europe, whose inhabitants penetrated to the west of the Black Sea, about the sixth century of the Christian era. They were repelled by the celebrated Belisarius: but in the following century they succeeded in forming a kingdom, which they called Little Bulgaria, along the southern shores of the Danube, in the heart of what is now European Turkey. The victories of Justinian the Second, Emperor of Constantinople, kept the Bulgarians in awe for a time; but they gradually extended their power at the expense of the Greek Empire, till, in the tenth century, they became masters of Dardania, Thessaly, and Epirus, under Simeon, the most celebrated of all their kings. Bulgaria was subsequently again united to the empire as a tributary state, and so continued for two centuries; but, in the thirteenth, it recovered its independence, and maintained a continual struggle with its more powerful neighbours; till it was at length reduced to a Turkish province by Bajazet, in 1396. As a Turkish province it has ever since remained.

Bulgaria is bounded in a more definite manner than most of the Turkish provinces. Its northern limit is the Danube, which separates it from Wallachia; the eastern boundary is the Black Sea; the southern is the mountains of the Balkan; and the western is formed principally by two small rivers. Placed, as it were, on the declivity of the Balkan, nearly the whole province is rugged and mountainous. Few countries owe more to the liberal hand of nature than Bulgaria. The soil is everywhere productive, and the numerous streams fertilize the fields which they traverse; while the beauty of the climate in summer, tempered by a considerable degree of cold in winter, contributes materially to the rapid increase of every kind of produce. All sorts of grain, cattle, horses, wool, iron, and wine, are raised in abundance, and would render this a highly flourishing country under a more liberal government than that of the Turks; for the Danube affords an easy communication with the neighbouring provinces and the Mediterranean, by means of the Black Sea. Bulgaria is considered by the Turks as the granary of Constantinople, so that the exportation of corn to any other place is strictly prohibited. Wheat, barley, and millet are raised in large quantities; and at one part of the province are large rice farms belonging to the Sultan, from the produce of which, many of the officers receive their salaries in kind. Honey, of excellent quality, is produced in great abundance, but the exportation is prohibited, on the same ground as that of corn, viz., in order to secure a plentiful supply to the capital.

The Rev. Mr. Walsh gives a favourable picture of the peasantry of this province. Although it forms part of Turkey, yet the inhabitants, like those of Moldavia and Wallachia, are Greek Christians, and have little of the Turkish character. The Turks who reside there are chiefly officials, or, at least, persons who deem them-

selves superior to the native inhabitants of the province. Mr. Walsh draws a striking contrast between the Bulgarians, who are simple, kind, and affectionate; and the Turks residing among them, who were rude and often brutal in their conduct.

On the road, (he says,) we frequently met groups of both, always separate, but employed in the same avocations; the Turks were known by turbans, sashes, pistols, and yatigans; but still more by a ferocity of aspect, a rude assumption of demeanour, and a careless kind of contempt, that at once repulsed and disgusted us. They never turned their buffaloes or arubas out of the way to let us pass, or showed the smallest wish to be civil and obliging; on the contrary, they were pleased if they pushed us into a bog in the narrow road, or entangled us among trees and bushes. Any accommodation in houses was out of the question; if we approached one for a drink of milk or water, we ran the hazard of being stabbed or shot.

The Bulgarian peasants are distinguished by caps of brown sheep-skin; jackets of cloth, made of the undyed wool of dark brown sheep, which their wives spin and weave; white cloth trousers, and sandals of raw leather, drawn under the sole, and laced with strings over the instep. They carry neither pistol, yatigan, nor any other weapon of offence. The dress of the females is described as being neat, clean, and comfortable. It generally consists of a jacket and petticoat of dark blue cloth, with a bright border of list round the edges or down the seams; and an under-garment of hemp and cotton, very large, hanging far below the petticoat, and gathered in full folds round the neck and arms, and worked or woven with lace-like borders. Married women wear handkerchiefs on their heads, with a long lappel hanging down the back behind; girls have their heads uncovered, with their hair braided and ornamented with different coins. All wear ear-rings, bracelets, and finger-rings, from an early age; and nearly all go barefooted.

Those who are accustomed to read books of travels, cannot fail to remark—at first with surprise, and afterwards, perhaps, with a smile—the very discordant results at which authors arrive respecting the manners, character, and industry of the people with whom they come in contact in their travels. The truth is, that, in most cases, these writers, however desirous they may be to adhere to the truth, have seldom opportunities to sift the matters on which they offer opinions. One traveller may pass through a country in the bleak season of winter, and his account of it will be tinctured with the cheerlessness which he observes; whereas another, who happened to travel there in a more genial season, will speak in glowing language of the country. Again, if a traveller happens to meet with kind usage from those with whom he has communication, he is apt to jump to the conclusion that the inhabitants, as a nation, are kind; while an opposite treatment will lead to an opposite result. We mention these circumstances, because we have found that the Bulgarians, their character, manners, and dwellings, are represented in different lights by different travellers; and we have wished to point out the probable cause for these discrepancies. The traveller from whom we just took an extract, says, that the countenances of the peasantry are so open, artless, and benevolent, and their demeanour so kind and cordial, that every one he met seemed to welcome him as a friend. Whenever their buffaloes or arubas stopped up the way, the peasants were prompt to turn them aside; and whenever they saw him embarrassed, or obliged to get out of the road, they were eager to show that it was not their fault. Their houses were always open to him, and his presence was a kind of jubilee to the family; and the compensation he gave for their hospitality was so small, and their mode of receiving it so disinterested, as to induce him to believe that if none had been offered, none would have been asked for.—Another traveller, who passed through this province in the winter season, when all was discomfort, has scarcely a word to say in favour either of the people or the country. We believe, however, that, in this instance, those who speak in rather favourable terms approach nearer to the truth.

A brief notice of Mr. Tietz's journey from the northern to the southern boundaries of the province will enable us to describe some of its features. The party, consisting of two gentlemen, two servants, a Tatâr or armed courier, and two postilions, were mounted on seven horses; while four horses carried the luggage; all the horses being hired, for a certain agreed sum, to carry the traveller and luggage from Rustchuk on the banks of the Danube, to Constantinople. The travellers left Rustchuk in the winter season, and travelled along a road which is deemed one of the best in the Turkish empire. Arriving at a river over which there was no bridge, the travellers had to swim their horses across; and as the water was partially covered with ice, the fording was anything but agreeable. However, after a good hour's ride they arrived at a village inhabited by Bulgarian Christians, entered a peasant's dwelling, and thouroughly dried themselves upon mats and carpets. Meanwhile the Tatâr, who was a Turk, prepared a meal in the Turkish manner; consisting of a roasted fowl, a dish of pilau, which consists of dried rice cooked in a little fat,—a dish of kibabs, consisting of small pieces of mutton, stuck on a wooden skewer, and roasted,—and finally cheese-cakes, to which succeeded a dessert of figs, dates, and grapes. The place of a table was supplied by a low footstool turned upside down, on the four inverted legs of which was placed a round wooden dish, for the reception of the food. The cottage—as appears to be generally the case in Bulgaria—was inhabited by a whole family, and the travellers sat comfortably round a blazing fire, conversing with the host; while the young men were smoking, and the women and girls were spinning cotton and wool. The Turks know the value of the Bulgarians as an industrious people, and seem, on the whole, to treat them more mildly than most others of their Christian subjects.

The travellers proceeded at a quick rate through a country sparingly supplied with towns and villages; meeting on their way with many fountains, founded in most cases by the pious endowment of individuals, for the refreshment of travellers who would else suffer from the little accommodation afforded in the way of inns or khans. Much taste is usually displayed in selecting an agreeable spot, shaded by trees, close to the road side, as the site of these springs; an iron or earthenware vessel is often found in a small niche built over the spouting tube; and around it are a few large stones, serving as seats. A well-kept, and gradually-ascending road conducted the travellers through a few villages to the foot of the Balkan mountains, which separate Bulgaria from Roumelia. The northern or Bulgarian side of these mountains is cooler than the southern, and is covered with large forests, consisting of fir, beech, and oak trees. The entrance to the pass of the Balkan is very romantic. On the left, close to the road, and surrounded by cypresses and plantains, is an elegant fountain; on the right, at the distance of about a mile, a pleasant village nestles in a hollow, at the foot of the mountain. The travellers passed over a bridge, beneath which a loud rushing stream descended from the heights; and then rode through a narrow ravine, bordered on either side by precipitous and almost overhanging rocks, and occasionally shaded by large oak trees. After ascending for four hours, they arrived at the small town of Tirnowa, which is deemed the metropolis of Bulgaria. We may here remark, that Bulgaria contains very few important towns; the inhabitants being rather of a pastoral character, living in villages more than in towns.

The travellers left Tirnowa, and ascended by a path contiguous to fearful abysses, and full of loose stones;

it was so narrow, that the horses were obliged to follow one another, in single file; and in many spots the sure-footed animals pass over fathomless chasms scarcely a foot wide. They at length reached a place where the road became exceedingly narrow, and made a bend round a sharp crag lying on the right, whilst on the left a very deep abyss yawned. The Tatâr drew a pistol from his belt, and fired twice, after which he explained to his employers the purpose of so doing. It appears that there is no possibility of two horses, especially if loaded, traversing this narrow path abreast: in case, therefore, of a caravan being on the point of entering the pass from the opposite direction, the pistol-shot is a signal that the path is already occupied, and that the advancing caravan must stop. After having passed this dangerous place, the travellers, came to the village of Gablowa, seated high in the mountains, close to a torrent interrupted by many falls; it was inhabited wholly by Bulgarian iron-smiths, the red flames of whose furnaces shone through almost every door, and the blows of whose hammers resounded from the surrounding mountains. As we have now reached the summit of the Balkan pass, the southern boundary of Bulgaria, we shall not follow the travellers any further in this direction.

Dr. Mc Michael, who travelled on horseback through Bulgaria from the Danube to the Balkan, nearly in the same manner as the travellers just alluded to, gives the following description of a village scene, shortly before arriving at the mountains:—

At midday we halted in the centre of a small village; and one of our *surugees* having placed himself on a little eminence set up a loud and piercing shout, which he maintained as long as his respiration would allow. No inhabitant had been visible as we entered the village; but after one or two repetitions of this extraordinary summons, an elderly peasant was seen making towards us with all possible speed, whom our conductor, on his approach, saluted with the dignified appellation of *Schorbatchie*, or captain, upbraiding him, however, at the same time, with delay. He, it appeared, was the chief of the village, and on him devolved the duty of providing strangers with food and lodging: should the traveller be a Turk, these accommodations are harshly exacted, and, I believe, never requited; and though we always endeavoured at our departure to satisfy our hosts, yet, at this remuneration was uncertain, our arrival in a village was never greeted by any very smiling countenances. On this occasion the *Schorbatchie* conducted us to a hut, where we obtained our usual refreshment of bread, eggs and wine, of not an unpleasant taste, though very weak in its quality; these articles of food were to be procured in almost every village we passed through, and if it were a large one, the Turkish luxury of *yaourt* was generally to be found.

There are one or two Bulgarian towns near the Danube, such as Silistria and Rustchuk, which are worthy of notice; but as we have it in contemplation to describe the Danube and its banks, in a series of articles, we shall not dwell farther on the subject here.—Our frontispiece represents the partially decayed remains of one of those caravanserais which the traveller so frequently meets with in Turkey.

THERE is a tear, whose muteness speaks
More than all language can convey,—
A tear, by which the full heart seeks
Its warm emotions to pourtray;
'Tis the most precious gem, in sooth,
That can by virtue's eyes be viewed,
In the heart's mine of age or youth,—
It is the tear of gratitude.—†

BEWARE how you allow words to pass for more than they are worth, and bear in mind what alteration is sometimes produced in their current value by the course of time.—SOUTHEY.

No prince ever loved peace more than King Henry the Seventh of England. The usual preface to all his treaties was, "that when Christ came into the world peace was sung, and when He went out of the world peace was bequeathed."

ON CHESS. No. XVI.

THE AUTOMATON CHESS-PLAYER. 4.

DURING the exhibition of the Automaton Chess-Player in London under its new proprietor, M. Maelzel, the mysterious box, without which M. de Kempelen stated the automaton could not play, was no longer consulted. Maelzel held a lighted candle in the interior before playing, and then left the candle burning on an adjoining slab. The mode of exhibiting the interior of the chest, the winding up of the machinery, and some other minor circumstances, were carefully observed by several persons who endeavoured to prove the existence of a concealed confederate. None, however, were successful, until Mr. Willis, of Cambridge, a gentleman well known for his high scientific attainments, published his attempt to analyse the automaton chess-player. Taking advantage of just so much as was seen and heard at the exhibition, and with the assistance of numerous drawings, his reasonings amount to the following simple conclusion; that the man, who really played the chess automaton, was concealed in the chest.

We now proceed to lay before the reader an abstract of Mr. Willis's clever work.

At the commencement of the exhibition the spectators are shown the interior of the chest, which appears to be so occupied by pieces of machinery that the concealment of a human being seems impossible. When the movements of the automaton begin, the beholders, in the first moments of surprise, and in the absence of any ostensible living cause, naturally refer the effect to the mechanism which has been exhibited, because the movements immediately follow the familiar action and well-known sound of winding up clock-work, and are skilfully accompanied by the grating noise of moving wheels. But still there is no evidence that the concealed machinery exerts any influence on the arm of the automaton, or that the machinery is ever in motion at all. The machinery at rest is freely exposed: the chest is ostentatiously opened, and the semblance at least of wheels, and pulleys, and levers, is submitted to inspection without reserve; but when their reality should appear, and their connection with the automaton be made manifest, the doors are carefully closed and no further examination permitted. The glaring contradiction between the eager display on the one hand and studied concealment on the other can only be reconciled by considering the exhibition of the mechanism as a mere stratagem, calculated to distract the attention and mislead the judgment of the spectators. This opinion, too, receives further support from the undeviating mode of disclosing the interior of the chest: doors and drawers are opened in one uniform order, in which no variation had ever been observed. The mode, too, of winding up was sufficient to convince a skilful mechanist that the axis turned by the key was quite free and unconnected either with spring or weight, or any system of machinery.

In all machines requiring to be wound up two consequences are inseparable from their construction: the first is, that in winding up the machinery, the key is limited in the number of its revolutions; and the second is, that some relative proportion must be constantly maintained betwixt the winding up and the work performed, in order to enable the machine to continue its movements. Now these results are not observable in the chess-player; for the automaton will sometimes execute sixty-three moves with only one winding up; at other times the exhibitor has been observed to repeat the winding up after seven moves, and even after three moves; and once probably from inadvertence without the intervention of a single move; whilst, in every other instance, the key appeared to perform the same number of revolutions; evincing thereby that the revolving axis was unconnected with machinery, except, perhaps a ratchet wheel and click, or some similar apparatus, to enable it to produce the necessary sounds, and consequently that the key, like that of a child's watch, might be turned whenever the purposes of the exhibition seemed to require it.

We come now to examine the interior of the chest,

and, by the assistance of several diagrams, the reader will have no difficulty in understanding how a human being was concealed within the machine, although it was apparently thrown completely open to public inspection before the automaton commenced play. The letters of reference apply to all the figures as well in this as in the preceding articles.

It will be first remarked that the drawer G (figs. 5 and 6,) does not, when closed, extend to the back of the chest, but leaves behind it an open space O, which is never seen by the spectators. The smaller division of the chest, the front door of which is seen open at A, (figs. 3 and 7,) is divided into two parts by a screen I, (fig. 3, where the reader is supposed to look down upon the internal arrangements,) movable upon a hinge and so constructed that it closes upon the machinery H, the same instant the door B is closed: this machinery H occupies the front part, and the hinder part K is empty; but it communicates with the open space O behind the drawer. The back of the greater division of the chest is double, and the part P (fig. 6) moves on a joint at the upper part and forms, when raised, an opening S, (fig. 5,) between the two divisions of the chest, by carrying with it part of the partition R, which consists of cloth tightly stretched.

It will be seen that the body of the Turk is occupied by an inner trunk N, (figs. 5 and 6,) the interior of which is not exhibited. This trunk N communicates with the chest by an opening at T. Thus, by simply raising the false back, a connection is made between the two cupboards, the trunk N and the space O behind the drawer.

At U (fig. 4) is a sliding panel which is moved on one side; the chess-player is introduced before the company are admitted, and the panel moved into its place. The player raises the false back of the larger cupboard, and occupies the position represented in fig. 7, by the shaded figure. All is now ready for the exhibition: the door A of the smaller division of the chest is opened, and a quantity of machinery is seen in so crowded a state that nothing can be seen far beyond the opening, and the visitor concludes that the whole cupboard is filled with similar machinery, and he is confirmed in this conclusion when the opposite door B (fig. 3) is also opened, a candle held to it, and the light is seen to glimmer among the wheel-work. The door B is then locked, and the screen I falls into its place at the same instant. This door B is made to close by its own weight, but is also locked because the head of the chess-player is soon to be placed behind it; and the chess-automaton would cease to be a mystery should this door fly open in wheeling the machine about the room. No notice is taken of this door being locked, because the keys are wanted for other locks.

The door B being secured and the screen I closed, the exhibitor, leaving the door A open, proceeds to open other parts of the machine. The drawer G is next opened for the apparent purpose of showing the chess-men, cushion, and counters, contained in it; but the real object is to give the player time to shift his position from that shown in fig. 7 to that seen in figs. 7 and 9, and to replace the false back and partition preparatory to the opening of the great cupboard. It will be seen that the body of the living player is now in the small compartment between the screen I (fig. 3) and the door B, both of which are closed, while his legs are contained in the open space O behind the drawer G, and thus the door A can be left open with impunity. The great cupboard being opened, a glance of the eye is sufficient to show that no person is concealed in it: and to make this more sure a lighted candle is held at a door which opens at the back. The doors A C C being left open, the chest is wheeled round to show the trunk of the figure; the door D (fig. 3) is opened, and the bunch of keys allowed to remain in it, probably to remove any suspicion which may have arisen by locking the door B. The drapery of the figure is then raised, and two doors, one in the trunk and the other in the thigh, opened; the chest is then wheeled round into its original position and the door closed. Meanwhile the concealed player withdraws his legs from behind the drawer, which he can do the more readily while it is left open.

In all this routine the spectator imagines that he has inspected the whole of the interior of the machine, and feels convinced that the parts not exposed are full of machinery: whereas several parts have not been shown at all, and even when all the doors except B are open, about one half of the chest is quite excluded from the sight.

The drawer G being pushed in and the doors A C C closed, the exhibitor occupies some time in adjusting the machinery at the back; during which the player assumes the position shown in a front view in fig. 10, and in profile in fig. 11. In this position his head being above the chess-board he sees through the waistcoat of the figure as easily as through a veil, all the pieces on the chess-board, and he can readily take up and put down a piece by means of a string communicating with the fingers of the figure. His right hand being within the chest is employed to keep in motion the wheel-work for producing the noise heard during the moves and to perform any other movements of the figure*.

This solution by Mr. Willis, of the difficult problem of the chess-automaton is highly creditable to his sagacity, for, except in his extensive knowledge of mechanical science, he had no facilities of observation that did not belong to an ordinary spectator. We need not, therefore, be surprised that, when all the avenues to the interior of the chest were closed, Mr. Willis should fall into error respecting the mode by which the concealed player conducted the game; for, it must be obvious, that "the waistcoat of the figure" would afford a very inefficient concealment against the eyes and ears of numerous spectators, sharpened as they were by curiosity to the detection of the slightest motion or sound. But

Fig. 7.

An elevation of the front of the chest, showing the concealed player in his first position when the door A is opened.

Fig. 8.

A side elevation, of the same, with the drawer open.

* The reader will not fail to notice a discrepancy between M. Winóisch's account of the mode of exhibiting the automaton and the mode actually adopted in London.

whatever is deficient in Mr. Willis's account has been subsequently supplied by M. Mouret, who, for a long time, constituted the source of vitality of the chess-automaton: this information, together with whatever else we may have to say on the subject, will appear in our next and concluding article.

Fig. 9.

A front elevation, showing the concealed player in his second position, when the door B is closed and A C C open.

Fig. 10.

A front elevation, showing the concealed player in his third position, or that in which he plays the game.

Fig. 11.

A side elevation of the same.

We are willing enough to keep at ever so great a distance from the faults, to which we have little or no inclination; and often affect to make our zeal in that respect remarkable; but then perhaps more favourite vices have easy entrance into our breasts, and take firm possession of them. We are shocked, for instance, and with much cause, at the monstrous and ruinous eagerness for pleasure, the profligate and unprecedented contempt of religion, that prevails in the world; our behaviour, on those heads, is unblameable, exemplary, and we value ourselves upon it beyond bounds. Yet possibly we indulge ourselves, all the while, to the full another way; are unjust and fraudulent, or selfish and unreasonable, or penurious and hard-hearted, or censorious and unforgiving, or peevish and ill-tempered; make every one about us uneasy, and those chiefly whose happiness ought to be our first care. This is applauding ourselves for being fortified, where the enemy is not likely to make an attack; and leaving the places that are most exposed, quite undefended. —Archbishop Secker.

THE BETEL-CHEWERS OF THE EAST.

Whether to blunt the edge of painful reflection, (remarks Mr. Marsden,) or owing to an aversion our natures have to total inaction, most nations have been addicted to the practice of enjoying by mastication, or otherwise, the flavour of substances possessing an inebriating quality. The South Americans chew the cocoa and mambee, and the Eastern people the *betel* and *areca*, (or, as they are called in the Malay language, *sirih* and *pinang*) much in the same way as tobacco is used in other parts of the world. All persons, without exception of age or sex, begin at an early age to accustom themselves to the use of betel, until it becomes an article of such necessity that many natives of the East would rather be deprived of their ordinary food than of the means of gratifying this acquired want. Europeans also who have resided long among the betel-chewers contract the habit, and enjoy it quite as much as the natives.

Betel, or *pawn*, as it is called in Bengal, consists of part of the fruit of the areca palm, folded in the leaves of a kind of pepper plant, called *betel*, smeared with a little lime, procured by burning shells, and from the form thus given to the article, the term *betel-nut* is derived.

The areca palm is a tree growing to the height of forty or fifty feet, with a straight round stem, six or eight inches in diameter, covered with a smooth ash-coloured bark, marked with parallel rings. The leaves, of which there are only six or seven, spring from the top, and are six feet in length, declining downwards from a stalk of considerable length. The fruit or nut is enveloped in a green shell or skin, thin, brittle, and of the consistence of paper: it is of an oval shape, like a small egg, and is much like a nutmeg when deprived of its husk. When ripe it appears in clusters of a reddish colour, forming a beautiful contrast with the bright green of its leaves, and it then falls off to sow itself in the ground.

The betel plant is a species of vine, with a leaf somewhat like that of the ivy. It is the *Piper betel* of botany, in the natural order *Piperaceæ*, and of the same genus as the *Piper nigrum* of Linnæus. Its culture, which is carefully attended to, is managed in the same manner. Poles are planted in the ground, round which the betel twines itself, and as it runs up, the poles, having taken root, acquire greater height also. It is a creeping plant, deriving support from more hardy vegetables, but it is said not to be injurious to them, like some other plants of a similar nature. Particular attention is bestowed on the cultivation of the areca and the betel. It was stated some years ago that the number of trees in the Prince of Wales's Island amounted to 342,110.

In different parts of India betel is cultivated in gardens on an extensive scale. The soil most favourable for the palm is a black mould on a substratum of limestone, or intermixed with calcareous nodules. It is planted in rows, and carefully manured and watered during several years. It begins to bear from the eighth or tenth to the fifteenth year, and remains in perfection for thirty years. Some individuals, however, produce fruit up to the seventieth, or even the hundredth year, but the produce gradually declines both in quality and quantity. It is stated that every fertile tree produces on an average 857 nuts, and an ordinary tree as many as 600, but this is by no means a general rule, for some trees produce only about 200 nuts.

The betel leaf is cultivated either in separate gardens, where a red stony soil on the side of a rising ground is preferred, and plantains or bamboos planted along with the vines, which are arranged in trenches, to support them as they grow: or when an areca plantation is formed and the palms are about fifteen years old, cuttings of the vine are planted near the roots, and

trained up to the trees. In twelve or eighteen months the leaves of the vine are fit for sale, and in three years they have attained their full size; in the fourth year they die, and new plants must then be substituted. In about eighteen or twenty years the soil is considered to be exhausted. The gardens are always inclosed by a hedge; nevertheless the depredations of squirrels and even of elephants sometimes occasion great loss to the cultivators. The crop of the areca is produced during three months; and the nuts being pulled are each cut into seven or eight pieces, and piled up in a heap: equal quantities of it and of terra japonica, with a hundred leaves of betel-leaf, are then beaten together with water and the juice strained off. This is mixed with a decoction of the *Mimosa indica* and water, and the nuts from the whole heap are boiled in it. They are then dried in the sun. The fresh nut cannot be eaten, because in its crude state it contains a white viscous matter, insipid to the taste, but occasioning delirium, a property which is lost by boiling or drying the nut.

Betel is therefore compounded of three ingredients, the union of which is supposed to correct the effects which each would produce singly: the nut improves the bitterness of the leaf, and the lime prevents any injury to the stomach. The first consequences to the betel-chewer are to turn the saliva red, and in progress of time to make the teeth black. If the lime be omitted, the saliva will not be tinged; and the baneful effect of this alkali on the enamel of the teeth may be prevented by rubbing them with a preparation whereby they become permanently coated with a black substance which preserves them from corrosion.

The medicinal effects of betel are to dispel nausea, to excite an appetite, and to strengthen the stomach. It also possesses nutritious and enlivening qualities which render it very acceptable to its consumers. The terra japonica is not a universal ingredient; its use is limited to certain countries; and it is probably nothing more than a preparation from the areca nut itself. There are two varieties of this substance; the one very astringent, and the other less so, and rather sweet, which is preferred. To obtain the former, the fresh nuts are boiled during some hours in an iron vessel; the decoction is then strained off, and thickened by continued boiling. The nuts being dried, are subjected to a second boiling, and the nuts being taken out, this second decoction is thickened by evaporation, and thus the best terra japonica is procured. The nuts are then dried, cut into pieces, and sold. Terra japonica is also procured by boiling the wood of the keira tree, or *Mimosa catechu*. This substance is probably the same as the *gambir* of Sumatra, which we shall presently mention.

The betel-chewers carry the ingredients for compounding betel about with them, and serve it to their guests on all occasions; the prince in a gold stand, and the poor man in a brass box, or mat bag. The betel-stands of the upper ranks are usually of silver embossed with rude figures. The sultan of Mocomoco was presented with one by the East India Company with their arms on it: the sultan also possessed a box made of gold filagree, which Mr. Marsden describes thus; the form of the stand is the frustrum of an hexagonal pyramid, reversed, about six or eight inches in diameter; it contains many smaller vessels, fitted to the angles, for holding the nut, leaf, and *chunam*, or quick-lime; with places for the instruments (kachiss) employed in cutting the first, and spatulas for spreading the last.

When the first salutation is over, which in Sumatra consists of bending the body, and the inferior putting his joined hands between those of the superior, and then lifting them to his forehead, the betel is presented as a token of hospitality, and an act of politeness. To omit it on the one hand, or to reject it on the other, would be an affront; as it would be also, in a person of subordinate rank, to address a great man without the precaution of chewing it before he spoke. All the preparation consists in spreading on the sirih leaf, a small quantity of the chunam, and folding it up with a slice of the pinang nut. Some mix with these, *gambir*, a substance prepared from the leaves of a tree of that name, by boiling their juices until a thick mass is obtained, from which little balls or squares are made: tobacco is also added, which is shred fine for the purpose, and carried between the lip and upper row of teeth. The red hue which is communicated to the mouth and lips is esteemed ornamental: and an agreeable flavour is imparted to the breath. The juice is usually, after the first fermentation produced by the lime, though not always, swallowed by the chewers of betel. In some countries it is not unusual for the guest who receives the betel from his host, to pass it between his thumb and fore-finger, and apply his own chunam, a practice which never gives offence, and is supposed to have originated from the horrible practice, once so common, of mixing up poison in the lime. The person, therefore, who receives the betel wipes off the chunam of his host, and applies his own before he passes the betel into his mouth.

It might reasonably be supposed that the active qualities of betel would injure the coats of the stomach, but experience seems to disprove such a consequence. It is common to see the teeth of elderly persons stand loose in the gums, which is probably an effect of this custom, but Mr. Marsden does not think that it affects the soundness of the teeth themselves. Children begin to chew betel very young, and yet, he says, their teeth are beautifully white, till pains are taken to disfigure them, by filing, and staining them black. To persons who are not accustomed to the composition, it causes a strong giddiness, astringes and excoriates the tongue and fauces, and deadens for a time the sense of taste. During the fast of *Ramadan*, Mahomedans abstain from the use of betel whilst the sun continues above the horizon; but excepting at this season it is the constant luxury of both sexes, from an early period of childhood, till, becoming toothless, they are reduced to the necessity of having the ingredients previously reduced to a paste for them, that without further effort the betel may dissolve in the mouth.

It is related in the *Life of Sir Stamford Raffles*, that when Lady Raffles reached Merambung, in Sumatra, being much fatigued with walking, the rest of the party having dispersed in various directions, she reclined under the shade of a tree, when a Malay girl approached in a graceful manner, and on being asked if she wanted anything, replied, "No, but as you are quite alone, I thought you might like to have a little *bicara* (talk;) so I came to offer you some *siri*, (betel,) and sit beside you."

It is stated in the *Encyclopædia Britannica* that

Betel is a very considerable article of traffic in India and in China, and, indeed, throughout Asia. In the British settlements of Bombay, Madras and Bengal, the value of the imports amounted in a single year to 138,836*l.*; and if the quantities consumed throughout the East are taken into view, it will appear surprising how they can be obtained. But, owing to the constant and extensive demand, the plants affording the necessary ingredients are carefully cultivated; and multitudes are employed and subsisted in the production of this eastern luxury.

WHEN all is quiet and the mind at rest,
All in the calm of innocence are blest;
But when some scruple mixes with our joy,
We love to give the anxious mind employ.

CRABBE.

BEING persuaded of nothing more than of this, that, whether it be in matter of speculation or of practice, no untruth can possibly avail the patron and defender long, and that things most truly are likewise most behovefully spoken.—HOOKER.

AGRICULTURAL CHEMISTRY.

2. On the Interchange of Crops (*concluded*), and on Manures.

When we grow in the same soil for several years in succession different plants, the first of which leaves behind that which the second, and the second that which the third, may require, the soil will be a fruitful one for all the three kinds of produce. If the first plant, for example, be wheat, which consumes the greatest part of the silicate of potash in a soil, whilst the plants which succeed it are of such a kind as require only small quantities of potash, as is the case with the leguminosæ, turnips, potatoes, &c.; the wheat may be again sowed with advantage after the fourth year; for during the interval of three years, the soil will, by the action of the atmosphere, be rendered capable of again yielding silicate of potash in sufficient quantity for the young plants. But if there be a successive growth of plants on the same soil which extract the same component parts, they gradually render that soil incapable of producing them.

The nutriment of young plants consists of carbonic acid, contained in the soil in the form of humus, and of nitrogen in the form of ammonia, both of which must be supplied to the plants. The formation of ammonia cannot be effected on cultivated land, but humus may be artificially produced. The sowing of a field with fallow plants, such as clover, rye, buck-wheat, &c., and the incorporation of the plants, when nearly at blossom, with the soil, effect this supply of humus in so far, that young plants subsequently growing in it find, at a certain period of their growth, a maximum of nutriment, that is, matter in the process of decay. The same end is obtained, but with much greater certainty, when the field is planted with esparsette or lucern. These plants are remarkable on account of the great ramification of their roots and strong developement of their leaves, and for requiring only a small quantity of inorganic matter. Until they reach a certain period of their growth, they retain all the carbonic acid and ammonia which may have been conveyed to them by rain and the air, for that which is not absorbed by the soil is appropriated by the leaves: they also possess an extensive four or six-fold surface capable of assimilating these bodies, and of preventing the escape of ammonia from the soil by completely covering it in.

An immediate consequence of the production of the green principle of the leaves, and of their remaining component parts, as well as those of the stem, is the equally abundant excretion of organic matters into the soil from the roots. Matter is thus supplied which is capable of being converted into humus.

It will be seen, then, that the interchange of crops is so advantageous, because by the cultivation of different kinds of plants upon the same field in a proper order of succession, each kind of plant extracts only certain component parts of the soil, whilst it leaves behind or restores those which a second or third species of plant may require for its growth and perfect developement. But although the quantity of humus in a soil may be increased by artificial cultivation, manures are necessary to replace the constituent parts of the soil which are removed in the seeds, roots, and leaves, of the plants raised upon it.

When we consider that every constituent of the body of man and animals is derived from plants, and that not a single element is generated by the vital principle, it is evident that all the inorganic constituents of the animal organism must be regarded, in some respect or other, as manure. During their life, the inorganic components of plants which are not required by the animal system, are disengaged from the organism. After their death, the nitrogen and carbon pass into the atmosphere as ammonia and carbonic acid, the products of their putrefaction, and, at last, nothing remains except the phosphate of lime and other salts in their bones. Now this earthy residue of the putrefaction of animals must be considered, in a rational system of agriculture, (continues Professor Liebig,) as a powerful manure for plants, because that which has been abstracted from the soil for a series of years must be restored to it, if the land is to be kept in a permament condition of fertility.

The author then proceeds to the analysis of various kinds of animal manure, in order to ascertain what substances a soil really receives by their means; whether these manures are all of a like nature and power; and whether, in every case, they administer to the necessities of a plant by an identical mode of action. We cannot follow up these details: but we may remark, that the fertilising properties of manures are due to the presence of ammonia, in some form or other. Plants obtain their nitrogen from ammonia, which is supplied to them by animal manure. It is a point, therefore, of the greatest importance to the agriculturist to supply nitrogen in sufficient quantity, and the readiest form in which it exists is putrescent animal liquid, which contains nitrogen in the forms of carbonate, phosphate, and lactate of ammonia, and in no other form than that of ammoniacal salts. Hence, great loss is experienced by the farmer in allowing his heaps of manure to exhale into the atmosphere their most fertilizing properties. The nitrogen of the heap escapes under the form of carbonate of ammonia, and a mere carbonaceous residue of decayed plants is after some years found in its place. The loss from the escape of ammonia from manure is very great, and, in spreading manure over land, there is a loss of fertilising properties which, with a little care, might be preserved. The method of preservation is to mix the manure with such substances as rapidly absorb the volatile matters. Gypsum, chloride of calcium, sulphuric or muriatic acids, superphosphate of lime, may be employed for this purpose: they may be procured at a very low price, and their action is to convert the volatile ammonia into salts which possess no volatility. If a basin, filled with concentrated muriatic acid, be placed in a stable, it becomes filled, after a few days, with crystals of muriate of ammonia. The ammonia which escapes from stables, &c., is not only entirely lost as far as our vegetation is concerned, but it also works a slow, though not less certain, destruction of the walls of the building. For, when in contact with the lime of the mortar, it is converted into nitric acid, which gradually dissolves the lime. The ammonia emitted from stables, &c., is always in combination with carbonic acid. Carbonate of ammonia and sulphate of lime (gypsum), cannot be brought together at common temperatures without mutual decomposition. The ammonia enters into combination with the sulphuric acid, and the carbonic acid with the lime, forming compounds which are not volatile, and, consequently, destitute of all smell. Now if we strew the floors of our stables, from time to time, with common gypsum, they will lose all their offensive smell, and none of the ammonia which is formed can be lost, but will be retained in a condition serviceable as manure.

The application of manures to land requires much careful discrimination and a great deal of knowledge respecting what component parts of the soil were removed by the crops which preceded the manuring. In horse manure we restore to the land some of the component parts of the hay, straw, and oats, with which the horse was fed. Their principal constituents are the phosphates of lime and magnesia, carbonate of lime, and silicate of potash; the first three of these preponderate in the corn, the last in the hay. The peculiar action of solid animal manure is limited to their inorganic constituents, which restore to the land that which is removed in the form of corn, roots, or grain. When straw which has been used as litter is added to the land, a further quantity of silicate of potash and phosphates is restored;

which, if the straw be putrefied, are in exactly the same condition in which they were before being assimilated.

The vegetable constituents of manure has some influence on the fertility of land, for by their decay carbonic acid is furnished to the young plants. But their influence is probably not very great when it is considered that a good soil is manured only once every six or seven years, or once every eleven or twelve years, when esparsette or lucern has been raised on it, that the quantity of carbon thus given to the land corresponds to only 5·8 per cent. of what is removed in the form of herbs, straw, and grain, and further, that the rain water received by a soil contains much more carbon in the form of carbonic acid than these vegetable constituents of the manure.

The use of animal manure in the crude form frequently does harm to the soil by disseminating the seeds of weeds which have remained in the manure without being deprived of their power of germination, and yet, says Liebig, it is considered surprising that where they have once flourished, they cannot again be expelled by all our endeavours: we think it very astonishing, while we really sow them ourselves every year. The botanist Ingenhous, attached to the Dutch embassy to China, could scarcely find a single plant on the corn-fields of the Chinese, except the corn itself.

Bone manure, from the quantity of phosphates of lime and magnesia contained in it, is a valuable substance for land. Liebeg says that the manure of an acre of land with 40 lbs. of bone dust is sufficient to supply three crops of wheat, clover, potatoes, turnips, &c., with phosphates. But the form in which they are restored to a soil is not a matter of indifference. For the more finely the bones are reduced to powder, and the more intimately they are mixed with the soil, the more easily are they assimilated. The most easy and practical mode of effecting their division is to pour over the bones, in a state of fine powder, half of their weight of sulphuric acid diluted with three or four parts of water, and after they have been digested for some time, to add one hundred parts of water, and sprinkle this mixture over the field before the plough. In a few seconds, the free acids unite with the bases contained in the earth, and a neutral salt is formed in a very fine state of division. Experiments instituted on a soil formed from grauwacke, for the purpose of ascertaining the action of manure thus prepared, have distinctly shown that neither corn, nor kitchen-garden plants suffer injurious effects in consequence, but that on the contrary they thrive with much more vigour.

In glue-manufactories many hundred tons of a solution of phosphates in muriatic acid are yearly thrown away as being useless. Professor Liebig suggests the importance of examining whether this solution might not be substituted for the bones. The free acid would combine with the alkalis in the soil, especially with the lime, and a soluble salt would thus be produced, which is known to possess a favourable action upon the growth of plants. This salt, muriate of lime (or chloride of calcium) is one of those compounds which attracts water from the atmosphere with great avidity, and might supply the place of gypsum in decomposing carbonate of ammonia, with the formation of sal-ammonia and carbonate of lime. A solution of bones in muriatic acid placed on land in autumn or in winter would, therefore, not only restore a necessary constituent of the soil, and attract moisture to it, but would also give it the power to retain all the ammonia which fell upon it dissolved in the rain during the period of six months.

There are numerous details in Professor Liebig's work, which, though of first-rate importance, are not suited to our pages. Our subject is rather to excite attention to this subject than to gratify it: and we cannot but express a hope that the views of the author may be fairly tested by our Agricultural Societies, and reduced to a set of plain rules and directions for the benefit of all persons engaged in agricultural pursuits.

The subject of manures is only now beginning to be understood; but it seems to be a principle of agriculture, that those substances which have been removed from a soil must be completely restored to it, and whether this restoration be effected by means of animal manure, ashes, or bones, is in great measure a matter of indifference. Liebig loooks forward to the time when the fields will be manured with a solution of glass (silicate of potash), with the ashes of burnt straw, and with salts of phosphoric acid, prepared in chemical manufactories, exactly as medicines are now prepared to be administered to the patient, as the exigency of the case requires.

China is the birth-place of the experimental art; the incessant striving after experiments has conducted the Chinese a thousand years since to discoveries, which have been the envy and admiration of Europeans for centuries, especially in regard to dyeing and painting, and to the manufactures of porcelain, silk, and colours for painters. These we were long unable to imitate, and yet they were discovered by them without the assistance of scientific principles: for in the books of the Chinese we find recipes and directions for use, but never explanations of processes.

Half a century sufficed to Europeans not only to equal but to surpass the Chinese in the arts and manufactures, and this was owing merely to the application of correct principles deduced from the study of chemistry. But how infinitely inferior is the agriculture of Europe to that of China! The Chinese are the most admirable gardeners and trainers of plants, for each of which they understand how to prepare and apply the best adapted manure. The agriculture of their country is the most perfect in the world; and there, where the climate in the most fertile districts differs little from the European, very little value is attached to animal manure. With us, thick books are written, but no experiments instituted; the quantity of manure consumed by this and that plant, is expressed in hundredth parts, and yet we know not what manure is.

Those who, in confidence of superior capacities, or attainments, disregard the common maxims of life, should remember that nothing can atone for the want of prudence; that negligence and irregularity long continued will make knowledge useless, wit ridiculous, and genius contemptible. —Johnson.

Seek you to train your favourite boy?
Each caution, every care, employ,
And, ere you venture to confide,
Let his preceptor's heart be tried;
Weigh well his manners, life, and scope:
On these depend thy future hope.—Gay.

It is truly a most Christian exercise to extract a sentiment of piety from the works and the appearances of nature. It has the authority of the sacred writers upon its side, and even our Saviour himself gives it the weight and the solemnity of his example. "Behold the lilies of the field; they toil not, neither do they spin, yet your heavenly Father careth for them." He expatiates on a single flower, and draws from it the delightful argument of confidence in God. He gives us to see that taste may be combined with piety, and that the same heart may be occupied with all that is serious in the contemplations of religion, and be at the same time alive to the charms and the loveliness of nature. —Dr. Chalmers.

With us it has all the authority of a moral aphorism, that the sobrieties of human virtue can never be invaded, without the equities of human virtue being also invaded. The moralties of human life are too closely linked and interwoven with each other, as that though one should be detached, the others might be left uninjured and entire; and so no one can cast his purity away from him without a violence being done to the general moral structure and consistency of his whole character.

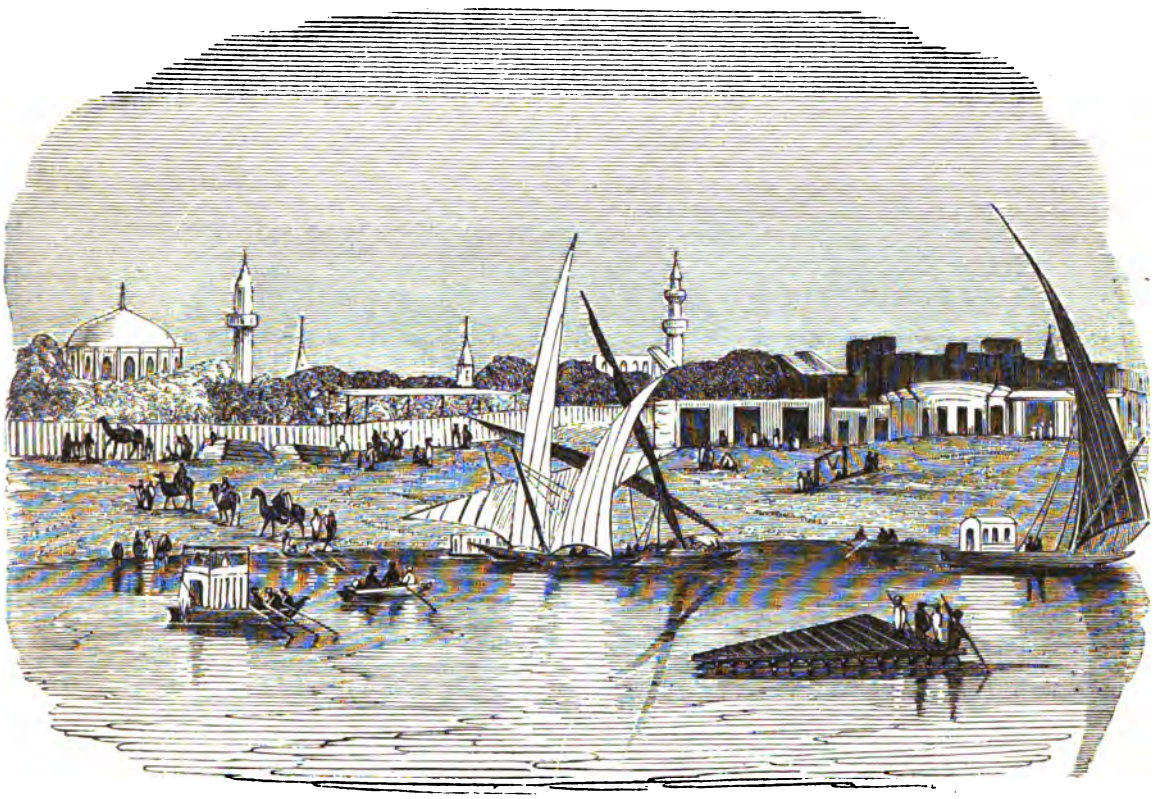
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, Price One Penny, and in Monthly Parts, Price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 588. SUPPLEMENT, AUGUST, 1841. { PRICE ONE PENNY.

A STEAM VOYAGE TO INDIA.



LANDING-PLACE AT BOULAK, NEAR CAIRO.

INTRODUCTION. DIFFICULTIES CONNECTED WITH A STEAM VOYAGE TO INDIA.

> Motions and means, on land and sea, at war
> With old poetic feeling, not for this
> Shall ye, by poets even, be judged amiss;
> Nor shall your presence, howsoe'er it mar
> The loveliness of Nature, prove a bar
> To the Mind's gaining that prophetic sense
> Of future change, that point of vision whence
> May be discovered what in soul ye are.
> In spite of all that beauty may disown
> In your harsh features, Nature doth embrace
> Her lawful offspring in Man's art; and Time,
> Pleased with your triumphs o'er his brother Space,
> Accepts from your bold hands the proffered crown
> Of hope, and smiles on you with cheer sublime.—
>
> WORDSWORTH.

THE advantages resulting from the establishment of steam-navigation are so numerous, that we need not feel any surprise at the attempt to extend its benefits to our Eastern possessions. A few minutes' inspection of a terrestrial globe, or of a good map of the world, will show how circuitous is the route by which the passage from England to India is made, round the southern promontory of Africa; and a little consideration of the peculiar winds prevalent in the Indian seas, and known by the names of the *trade winds* and the *monsoons*, would show how desirable it is to have a motive power for shipping independent of the winds. Hence have arisen two different classes of projects; one for establishing a route to India shorter than the accustomed one round the Cape of Good Hope; and another, for performing the voyage in steam-vessels instead of sailing-vessels. Each of these classes of projects has had numerous advocates, who, in too many cases, have carried on the discussions relative to the subject in a spirit of partisanship which has done more evil than good.

In attempting to select a shorter route than the accustomed one, the attention of navigators was naturally directed to the Mediterranean, the western end of which communicates with the Atlantic, and the eastern end is separated by a comparatively short distance from two seas which empty themselves into the Indian Ocean, viz., the Red Sea and the Persian Gulf. If we notice the position of the north-east corner of the Mediterranean, we see that it is not very far distant from the upper part of the river Euphrates, which flows downward into the Persian Gulf, and thence into the Indian Ocean. We also see that from the mouth of the River Nile, on the Mediterranean coast, to Suez at the head of the Red Sea, the distance is very small, and that this narrow tract of land, called the Isthmus of Suez, is the only bar to an uninterrupted water communication from England to India. Now these two facts have been the bases on which numerous projects have been founded within the last few years. Colonel Chesney and other officers have been commissioned by the English Government to survey the river Euphrates, with the view of ascertaining whether an available route might be established in that direction; while at the same time various public companies have been established for forwarding what we may perhaps term the Red Sea project. The books, pamphlets, debates, letters, and plans which have been published on these subjects are so numerous, that a bare enumeration of them would exceed our limits; and we shall therefore simply state, that for the present the Euphrates plan appears to be abandoned, chiefly on account of the lawless character of the natives on either bank of that river. We shall therefore confine ourselves to the other project. A voyage was made by the *Enterprise* steam-vessel from

England to India, round the Cape of Good Hope, as long back as the year 1825; and a steam voyage was made from Bombay to Egypt, by way of the Red Sea, in 1830; and it then became a question, on observing the success of these two attempts, how far the Red Sea might be made the channel of a steam-packet route from England to India. To show the manner in which it has been proposed to work out this plan, we will give a short abstract of a scheme for establishing a post-office communication on this route proposed by Captain Head in 1832. He proposed that the post-office steamers, which at that time ran once a month from Falmouth to Malta, should carry the mail-packet to the last-mentioned place, performing the distance of 2250 miles in sixteen days. After stopping two days at Malta, the packet was to be forwarded by steam to Alexandria, the great commercial port of Egypt; the distance, about 837 miles, being performed in six days. At about half-way between Alexandria and Suez, that is, between the Mediterranean and Red Seas, lies the city of Cairo; and it was supposed that a land journey of from four to six days, by way of Cairo, would convey the packet from Alexandria to Suez. It was proposed that another steamer should be ready to convey the packet from Suez to Bombay; but as this distance is nearly three thousand miles, it was proposed to establish a coal depôt at Aden, at the mouth of the Red Sea, 1323 miles from Suez. The vessel was to remain two days at Aden, for the purpose of taking in a supply of coals and other stores, and was then to proceed on her voyage to Bombay, from which place communication might be held with Calcutta and Madras in the way most convenient. It was calculated that the whole distance from Falmouth to Bombay, about 6250 miles, might be traversed in fifty-one days.

The above is a very fair example of the plans which were proposed in reference to this subject; but it soon became evident that many difficult questions had to be decided before the practical adoption of any such plans could be resolved on. Among these questions were such as the following;—whether the plan should be put in operation by the Government, by the East India Company, or by private joint-stock companies; whether the whole route should be undertaken by the same company, or whether one company should perform the passage from England to Egypt, and another from Egypt to India; whether Mehemet Ali, the Pacha of Egypt, would countenance the establishment of a route through his dominions; whether the route from Alexandria to Cairo should be performed by land, or by boats or packets along the river Nile; whether the steam-voyage should terminate at Bombay, or should be extended round the southern point of India to Madras and Calcutta; and lastly, whether it should be only a post-office communication, or one for travellers generally. Slowly, and not till after much warm controversy and discussion, have these difficult questions been decided; and we proceed to state the actual results which have been attained.

In the early part of the year 1838, it was announced that the Sultan of Aden, at the mouth of the Red Sea, had surrendered that place to the English, for the purpose of a coal depôt, on an annual compensation to be paid to him by the East India Company. The acquisition of this town, which has the best harbour in the Red Sea, placed the steam-communication between Bombay and Suez, on a firmer footing than before. This possession, however, was not undisturbed by the restless and fierce propensities of the Arabs; for in the Autumn of 1839 a daring attack was made on the town by the ex-sultan and six thousand Arabs. The attack was completely repelled; and the Arabs had cause to lament the instigations of their chief, who told them "that all the buttons worn by the English were of solid gold, and that precious stones and valuables of all kinds awaited their expected victory." This discomfiture was followed by a determination on the part of the Arabs to starve out the English, if possible; they completely cut off the communication from Aden to the interior, and killed any straggling soldiers of the garrison whom they met with. The garrison had to obtain provsions by the aid of their ships. Matters continued much in the same state till towards the middle of the year 1840, when the Arabs made three desperate attempts to gain the town, in May, June, and July; but they were invariably repulsed with great loss; and the Indian government strengthened the garrison and fortifications of Aden. From the accounts which reached England in the early part of the present year, it appears that the Arabs had discontinued their attacks, the hard-worked soldiers had recovered their health, the supply of provisions was abundant, the climate very fine, and the trade of the town increasing; so we may now probably reckon Aden as a permanent English establishment, and as a depôt for the Red Sea steamers.

From this mention of Aden, we pass on to notice the proceedings of the steam-companies. The voyage from Bombay to Suez and back continued to be made at intervals, long before the completion of arrangements for continuing the voyage to England. On the 1st of April, 1840, the *Victoria* steamer left Bombay; reached Aden on the 9th; set sail again on the 17th, after remaining at Aden twenty-seven hours; and reached Suez on the 14th; thus performing the journey from Bombay to Suez, 2992 miles, in less than sixteen days and a-half. She set sail again on the 21st; reached Aden on the 27th; and arrived at Bombay on the 6th of May. The mail from England happened to reach Suez, after a rapid voyage, about three days after the arrival of the *Victoria* at that place; and it thence resulted that despatches from England, dated April 5th, actually reached Bombay on the 6th of May, after an interval of only thirty-one days. This unexampled celerity of communication acted as a great spur to the furtherance of the plans on this subject. About the middle of the year, two of the companies which had entertained projects on this subject, seemed to approximate towards an agreement. One of these companies proposed to forward mails and letters to and from India by two routes, one a land-route through France *via* Marseilles, and the other a sea-route by Falmouth and Gibraltar; both uniting at Malta.

The outward mails through France were to leave London on the 4th of every month; while the sea-packets were to start on the 1st; both to reach Malta on the 13th, and to start from thence to Alexandria on the 14th. The land-route was principally for the post-department, as allowing letters to be despatched three days later; but for the sea-route, the vessels were to be fitted up for the reception of passengers. The vessels were to leave the passengers and letters at Alexandria, from whence they were to be despatched to India by any other company which might act in concert with the one just alluded to; and were then to return to England with the mail from India. The arrangement proposed to Government, with respect to the post-office, was, that letters would be conveyed throughout the distance from London to Alexandria in fifteen days, and from Alexandria to London, on account of adverse winds in the Mediterranean, in sixteen days.

It has proved, in this as well as many other projects in which steam-power is concerned, that the estimates have been more than equalled by the performances. The following is an extract from the log of the *Oriental*, for her first trip to Alexandria and back, in the autumn of the year 1840:—

Outward Voyage.	Hours	*Distance Naut. Miles.*
Time steaming from Falmouth to Gibraltar..	129¼	1064
" " Gibraltar to Malta	111½	980
" " Malta to Alexandria ..	96½	824
Total time out (steaming)..... Or 13 days, 17½ hours.	339¼	2868

Homeward Voyage.		
Time steaming from Alexandria to Malta ..	92¼	825
" " Malta to Gibraltar	109½	983
" " Gibraltar to Falmouth..	119	1068
Total time home (steaming) ..... Or 13 days, 9 hours.	321	2876

The stoppages at Gibraltar and Malta are not reckoned in this account; but, including the allowance for them, the vessel performed the whole distance out and home in 36¼ hours less than the contract time.

As a farther elucidation of the singular effects which this rapid system of travelling may be supposed to produce on the old modes of communication, we give the following from a Calcutta journal of last year:—"The express which came in on the 27th May to Calcutta from Bombay, with the Europe mail, left that presidency on the 7th. Thus, there was communication between London and Bombay in one month and two days, and between London and Calcutta in one month and twelve days—or forty-two days! the shortest period on record. On the 26th of February, the residents at the Cape were in possession of English intelligence to the 4th of December, received from Madras, whither it had been conveyed by the overland mail! Who would have supposed, ten years ago, that the Cape of Good Hope, then the half-

way house for English news on its way to India, would at this date be indebted to an arrival from this country for its own share of intelligence?"

It was not until the early part of the present year that the various difficulties to which we alluded in the former part of this paper, were overcome by the coalition of two companies; of which companies, one was formed principally of persons connected with the Mediterranean traffic, and the other of mercantile men in India, who were more nearly acquainted with the traffic of the Red Sea. By the united exertions of the two bodies, the whole distance from England to India will be placed under the regulations of one system; and it appears, from an announcement in the public journals about three or four months ago, that arrangements are being made for extending this communication, not only to Bombay, the nearest important city of India, but also to Ceylon, Madras, and Calcutta, with the full sanction and support of the East India Company. The Government has also contracted for the conveyance of mails to and from Alexandria and London, one mail to start every month in each direction. Arrangements are also being made for placing steamers on the Nile, for the more speedy conveyance from Alexandria; and also, with the sanction of the Pacha of Egypt, the land route over the Desert from Cairo to Suez is being made more efficient. It thus appears that the plans which have been for sixteen or eighteen years under discussion, will at length be brought into practical application, in a manner which meets the wishes and receives the sanction of the Government, of the East India Company, and of the commercial world in general.

Section I. Route to India by way of Egypt and the Red Sea.

We now propose to follow out an idea which has been partially acted on in three of our former Supplements, viz, to make an imaginary trip from India to England, or from England to India, and notice the chief objects of interest on the way. On the occasions just alluded to, our journeys were overland through Persia; but we now intend to trace the route followed by travellers under the new system, in which Egypt and the Red Sea constitute portions of the route. A lively and pleasing writer, the late Miss Emma Roberts, made this journey in the latter end of the year 1839; and from her graphic account of the incidents and details of her journey, we shall be able to illustrate in a tolerably clear manner the nature of this remarkable and diversified route. We shall borrow from other sources in our notice of cities and countries.

Miss Roberts accompanied her sister, the lady of Captain Mc Naghten, to India in 1828, where she remained three or four years; after which she returned to England. But the alterations in the commercial arrangements of India, consequent on the renewal of the Company's Charter, having given a new tone to Anglo-Indian society, she was desirous of once again visiting a land which had many pleasant associations for her. She quitted England in September, 1839, arrived at Bombay in November in the same year, and resided in different parts of Western India for about ten months, when she died, to the universal regret of the European inhabitants in that land.

The route followed by this lady was overland through France, by packet from Marseilles to Alexandria, up the Nile to Cairo, across the Desert to Suez, and thence by sea to Bombay. Miss Roberts and a female friend proceeded to Havre, by steam. After staying a few hours at Havre, the travellers proceeded by another steamer to Rouen, up the river Seine. Of Havre Miss Roberts says:—"Havre appears to carry on a considerable commerce with India, several shops being wholly devoted to the sale of the productions of the East, while the number of parrots and monkeys to be seen show that the intercourse must be very extensive. The shops had a very English air about them; and though the houses were taller, and rather more dilapidated in their appearance, than they are usually found at home, they reminded us of familiar scenes; and but for the novelty of dining at a *table d'hôte*, we might have fancied ourselves still in England..... English carriages were arriving every hour; the steamer from Southampton brought an immense number of passengers, and travellers seemed to flock in from every part of the world."

At 4 o'clock on the following morning the travellers left Havre in the Rouen steamer. The banks of the Seine are picturesque, presenting pleasing objects of rural enjoyment; the houses have a neat and clean appearance, and are surrounded with little parterres or gardens filled with flowers. By about noon the steamer reached Rouen. This ancient city presents many attractions for a traveller, particularly those connected with the memory of Joan of Arc; but nothing seemed to arrest our travellers' attention more than the houses of the trading classes. Seven or eight stories in height, weather-stained, and dilapidated, the upper floors are so destitute of everything which an English person calls *comfort*, that the splendour of the shops below excites considerable surprise. It is, however, impossible to devote much time to descriptions of French towns, so we must proceed in our route. At 4 o'clock on the following morning, two boats proceeded from Rouen up the Seine, in one of which Miss Roberts and her companion embarked; and after going a certain distance up the river, they landed, and proceeded the rest of the way to Paris by a railway which had been recently opened. It may be here remarked, that, however pleasant may be a voyage up the river Seine, considered in respect of the scenery on its banks, an English traveller is always subjected to considerable inconvenience, on account of the strictness of the arrangements in France with respect to passports.

To describe anything relating to Paris would be, of course, unnecessary after our recent Supplements on that subject; we shall therefore merely say that the travellers proceeded by diligence to Chalons, having despatched their luggage by *messagerie* to Marseilles. Instead of stopping at Chalons, they proceeded uninterruptedly to Lyons, where they remained a few hours, and then started in a steamer down the river Rhone to Marseilles. They stopped for a short time at Beaucaire, the disembarking at which will remind many a traveller of scenes which they have witnessed. "The night was very dark, and a scene of great confusion took place in the disembarkation. We had agreed to wait quietly until the remainder of the passengers got on shore; and Miss E. and myself, glad to escape from the bustle and confusion of the deck, went down below to collect our baggage, &c. The quay was crowded with porters, all vociferating and struggling to get hold of parcels to carry, while the *commissionaires* from the hotels were more than ever eager in their recommendations of their respective houses: their noise and gesticulations were so great, and their requests urged with so much boldness, that we might have been led to suppose we had fallen into the hands of banditti, who would plunder us the moment we got into their clutches."

The distance from Beaucaire to Marseilles is traversed in the course of a few hours. Marseilles is a city and seaport of France, the capital of the department of Bouches de Rhone (Mouths of the Rhone). It is not situated exactly at the mouth of the Rhone, but some short distance from it, on the eastern curve of the Gulf of Lyons, and therefore on the shores of the Mediterranean. Its direct distance from Paris in a straight line is rather more than four hundred miles; but by the route usually followed by travellers through Auxerre, Chalons, and Lyons, it is about five hundred. Marseilles was known by the name of *Massilia*, so long ago as six hundred years before the Christian era, it having been founded by a colony of Ionians. During the long interval which has since elapsed, more than twenty-four centuries, Marseilles has ever been a place of importance; first in the hands of the Greek colonists; then as a Roman city; then as a possession of the Franks; afterwards as the capital of the Kingdom of Provence; subsequently as a port whence several armaments of Crusaders sailed; and in more recent times as a commercial city of the French kingdom. The site of Marseilles is a rich valley or hollow inclosed on the land-side by hills, and on the sea-side by a harbour formed of an inlet of the sea. From the summit of a hill on the north side of the town, a fine view is obtained of the town and of the numerous country-houses (said to be five or six thousand in number,) which occupy the surrounding parts of the valley. The entrance from Paris is by a fine broad planted road or street, which extends into the heart of the town, and is prolonged in a direct line, by a street of less width, quite through the town. Eastward of this street is the old town, occupying a triangular point north of the harbour; while the western side constitutes the new town, which consists of broad straight streets, provided with paved foot-paths and lined with well-built houses. The port or harbour is capable of containing twelve hundred vessels, and is surrounded by fine quays used as a promenade by the townsmen in fine weather. There are several other promenades, as well as open squares or "places." As a commercial city Marseilles is one of the first in France, since the entire French trade with the

Levant, as well as a considerable portion of that with Italy, Spain, and Barbary, is carried on from that port. The number of vessels which enter the port is estimated at five or six thousand annually; and the customs and other dues collected are estimated at nearly one million sterling. It has communications by daily public conveyances with Lyons, Aix, Avignon, Nismes, Toulon, Geneva, and other places; and by steam-boats at brief intervals with Nice, Genoa, Leghorn, Bastia, Civita Vecchia, and Naples; and at longer intervals with Port Vendre, Barcelona, and Valentia. The commercial character which these communications impart to Marseilles makes it the resort of foreigners of all nations; and the variety of costume, continual bustle, and medley of languages which this circumstance occasions, are among the most striking features of the place.

The great increase of letters consequent on the reduction of the rates of postage in England and France, as well as the rapidity of communication with India by way of Egypt, have led to the establishment of packets at Marseilles, for the conveyance of mails between that place and Malta. In some instances this is altogether a French speculation, while in others it results from an arrangement between the post-office authorities of the two countries. As an illustration of the mode in which the route *viâ* Marseilles is made available to English correspondents, we may mention that, on the 4th day of every month for the last year and a half, a mail-packet has left London, with letters of that date, and proceeded through France to Marseilles, where a steamer was in readiness to forward it to Malta, in time to meet another steamer which left Falmouth with passengers on the 1st of the same month; the letters and passengers afterwards proceeding in the same vessel to Alexandria. These circumstances being premised, it will be easier to understand the mode in which the travellers whom we propose to accompany, obtained a passage to Malta. There was an English steamer waiting at Marseilles, to carry the mail as soon as it should arrive from England; and a French steamer which was about to start immediately. Miss Roberts and her companion, therefore, after spending a short time at Marseilles, engaged a passage in the *Megara* English steamer, and proceeded on their journey as soon as the mails arrived from England.

A glance of the map of Europe will show, more clearly than words can describe, the route from Marseilles to Malta. Marseilles is at the northern margin of a kind of semicircular portion of the Mediterranean, the curve of which is formed by the continuous coasts of Spain, France, and Italy, and the base or diameter by the northern coast of Africa. Rather eastward of the centre of this semicircle are the islands of Corsica and Sardinia; while between the southern point of Italy and the shore of Africa is Sicily, at the southern extremity of which is the little island of Malta. This island is one of the most important in the Mediteranean, both in a political and a commercial point of view. It serves as a rendezvous and garrison for troops, to protect English interests in that part of the world; and it furnishes a convenient depôt and harbour for ships on their way along the Mediterranean. The distance along the Mediterranean from west to east, from Gibraltar to Egypt, is about two thousand miles, and Malta is situated not far from the middle point of this line. This very advantageous position gave rise to the arrangement to which we just alluded, whereby a steamer with passengers, *viâ* Falmouth and Gibraltar, meets a mail-packet, which left England three days later than the steamer, and proceeded to Malta by way of Marseilles. The distance from Marseilles to Malta is somewhat less than from Gibraltar to Malta, the former occupying a steamer about four days to traverse, and the latter about five days.

Section II. Arrival at Malta and Voyage to Alexandria.

We may now relieve these details by a few of Miss Roberts' pleasant notes of her journey from Marseilles to Malta. "The *Megara* belonged to a class of steamers built for the Government upon some new-fangled principle, and which have the art of rolling in any sea. Though the waters of the Mediterranean were scarcely ruffled by the breeze, which was in our favour, there was so much motion in the vessel, that it was impossible to employ ourselves in any way except in reading. In other respects, the *Megara* was commodious enough; the stern cabin, with smaller ones opening into it, and each containing two bed-places, was appropriated to the ladies, the whole being neatly fitted up. We found some agreeable fellow-passengers; the only drawback being a family of three children. In consequence of the cabins being thus occupied, we could not preserve the neatness and order which are so essential to comfort, and which need not be dispensed with even in a short voyage. Our commandant, Mr. Goldsmith, a descendant of the brother of the poet, and who appeared to have inherited the benevolence of his distinguished relative, was indefatigable in his exertions to render us happy." The only coasts in sight during the voyage to Malta, were those of Sardinia and Africa, Sicily being too far off to be visible; of Sardinia the travellers were only near enough to see a long succession of irregular hills, which presented a beautiful appearance by the light of an Italian sky. The vessel arrived at Malta on the morning of the fifth day from leaving Marseilles, having been four days and five nights on the voyage *. The travellers hastened to gain a view of the island, as soon as the vessel arrived before it. "Much as I had heard of the gay singularity of the appearance of Malta, I felt surprise as well as delight at the beautiful scene around; nor was I at all prepared for the extent of the city of Valetta. The excessive whiteness of the houses, built of the rock of which the island is composed, contrasted with the vivid green of their verandahs, gives to the whole landscape the air of a painting, in which the artist has employed the most brilliant colours for sea and sky, and habitations of a sort of fairy-land. Nor does a nearer approach destroy this illusion; there are no prominently squalid features in Malta; the beggars, who crowd round every stranger, being the only evidence, at a cursory gaze, of its poverty."

Miss Roberts found, on reaching Malta, that the *Acheron* steamer had arrived there from Falmouth and Gibraltar, with the Levant mails, and that these mails were to be forwarded to Alexandria in the government steamer *Volcano*. The reader will remember, that, at that period (the autumn of 1839,) affairs were in a very unsettled state between Mehemet Ali and the European powers; and the travellers were recommended to proceed in the government steamer to Egypt without delay, as the best means of ensuring a passage to the Red Sea. Miss Roberts and her lady companion then went on board this vessel, and proceeded on their journey to Alexandria. In her notes she made sad complaints of the neglect and inattention which the passengers experienced from the officers of the government steamer; but, as we believe that the proceedings of the last year and a half have made many favourable changes in this respect, we will not detail the circumstances which gave rise to the complaints. Suffice it to say, then, that the vessel, after a five days' voyage, arrived at Alexandria. It may be convenient to the reader to bear in mind, that the overland mail-route from London to Marseilles, the sea-route from Falmouth to Gibraltar, from Gibraltar to Malta, from Marseilles to Malta, and from Malta to Alexandria, do not differ one from another in point of time more than about one day; the average time for all these portions of the journey being from four to five days each. The route from Malta to Alexandria passes somewhat to the south of the island of Candia, but is in other respects almost entirely out of sight of land. The *Vulcan* had on board one of Mehemet Ali's *protégés*, a young Egyptian who had been educated at the pasha's expense in England, where he had resided for ten years, principally in the neighbourhood of a dock-yard, in order to study the art of ship-building. Although the temperature is almost too high for comfort, yet the Mediterranean steamers are often kept cool by a wind-sail, which keeps up a current of air in the cabins.

The *Volcano* had other ladies on board; and, on landing at Alexandria, "the lady-passengers, who arrived in the steamer, agreed to prosecute the remainder of the journey in company; our party, therefore, consisted of four, with two servants and a baby; the latter a beautiful little creature, of seven months old, the pet and delight of us all. This darling never cried, excepting when she was hungry; and she would eat anything, and go to anybody. One of the servants who attended upon her was a Mohammedan native of India, an excellent person, much attached to his little charge; and we were altogether a very agreeable party, quite ready to enjoy all the pleasures, and to encounter all the difficulties, which might come in our way."—If there ever is a time when a cheerful tone of spirits is necessary, it is at such a period as this, when females, accustomed to the comforts of English society, are about to brave the rude and often lawless customs of an Oriental country, deprived of those associations which a residence at home presents to them.

* For an account of Malta, see *Saturday Magazine*, vol. XVII., pp. 82, 170, 250.

Referring to our Number 534 for a description of Alexandria, we may here merely remark, that Miss Roberts found it all that travellers describe it to be, a city of narrow streets choked with sand; and, as the political state of Egypt rendered it desirable to hasten her departure for the Red Sea as much as possible, she set off for the Nile, to proceed by boat up that river to Cairo. The party left the hotel in which they had been accommodated, and rode to the place where they were to take boat. The cavalcade was a curious one:—"Our supplies consisted of tea, coffee, wine, wax-candles, (employing a good glass lanthorn for a candlestick), fowls, bread, fruit, milk, eggs, and butter; a couple of fowls and a piece of beef being ready roasted for the first meal. We also carried with us some bottles of filtered water. The baggage of the party was conveyed upon three camels and a donkey, and we formed a curious-looking cavalcade as we left the hotel. In the first place, the native Indian servant bestrode a donkey, carrying at the same time our beautiful baby in his arms, who wore a pink silk bonnet, and had a parasol over her head. All the assistance he required from others was to urge on his beast, and by the application of sundry whacks and thumps, he soon got a-head. The ladies, in coloured muslin dresses, and black silk shawls, rode in a cluster, attended by the janissary, and two Arab servants, also on donkey-back; a gentleman, who volunteered his escort, and the owners of the donkeys, who walked by our sides." On arriving at the banks of the canal which leads from Alexandria to the Nile, the party got into a miserable-looking boat containing two cabins or rather cribs, in which the ladies could hardly stand upright. The arrangements had not then been entered on, which have since been put in operation, of performing the voyage to Cairo in commodious iron steamers; and the passengers passed a sleepless night on board this boat, tormented, in no small degree, with musquitoes and other unwelcome visitors.

On arriving at Atfee, preparations were made for ascending the Nile. Nearly all the boats at that place were engaged by Mehemet Ali, who happened to be at Atfee at the time; but the governor of the town engaged that one should be placed at the disposal of the travellers. All these matters, it will be observed, are now put in better train by the establishment of steamers on the Nile. The mails were carried up to Cairo in the same boat which carried the travellers.

The voyage up the Nile was made in tolerable comfort, the ladies enjoying as much open air as the size of their boat would allow, and watching whatever objects were presented to their notice from shore. However famed may be this noble river, yet to a traveller by it, the banks on either side are singularly uninteresting; date trees thinly scattered, and villages at wide intervals, are nearly the only objects which break the monotony of the flat shores. The boat was propelled in three different ways, according to circumstances; by sails; by oars, or by dragging with ropes along a towing-path. "Our arrival at a village," says Miss Roberts, "alone relieved the monotony of the landscape. Some of these places were prettily situated under groves of dates and wild fig-trees, and they occasionally boasted houses of a decent description; the majority, were, however, most wretched, and we were often surprised to see persons respectably dressed, and mounted upon good-looking donkeys, emerge from streets and lanes leading to the most squalid and poverty-stricken dwellings imaginable. The arrival of a boat caused all the beggars to hasten down to the river-side; these chiefly consisted of very old or blind persons. We had provided ourselves with *paras*, a small copper coin, for the purpose of giving alms to the miserable beings who solicited our charity; and the poor creatures always went away well-satisfied with the trifling gift bestowed upon them." The far-famed Pyramids came in sight when still thirty-five miles distant; and on the second evening after embarkation the boat entered Boulak, the port of Cairo.

It was at half-past nine in the evening, on October 4th, 1839, that the travellers landed at Boulak; and as the gates of Cairo are closed at nine in the evening, it was apprehended that admission would not be gained that evening. It fortunately happened, however, that there was a *moolid*, or religious fair, held that evening at the opposite end of the city, and that the gate adjacent thereto was still open. The party, therefore, hired donkeys, and proceeded round the outside of the city, passing through the middle of the fair on their way to the open gate. The peasants were not a little surprised to see, by the light of their lamps and lanthorns, a group of European ladies riding on donkeys, at ten or eleven o'clock at night; but no insult or hindrance was offered to them, and they safely arrived at the hotel in Cairo to which they were recommended. Here we must leave them for awhile. Our articles on Cairo will give a tolerably exact idea, so far as they extend, of the curiosities and inhabitants of this Egyptian metropolis; and we shall therefore refrain from entering into similar details here.

Section III. Arrangements for crossing the Desert.

It will now be desirable for us to notice a few points respecting the route from Cairo to Suez, the place of embarkation on the steamers destined for Bombay. From the banks of the Nile to Syria is one continuous desert, into which juts the arm of the Red Sea, at the extremity of which Suez is situated. Hence the upper part of this arm or branch is bordered on both sides by desert tracks; and Suez cannot be reached except across the Desert, whether in a south-western direction from Syria, a southern direction from the Mediterranean, or an eastern direction from Cairo. The route to Suez by way of Cairo is not made on account of shortness, for it is really longer than if passengers landed from the Mediterranean at a point due north of Suez, but because there is no convenient harbour at the last-mentioned spot, and no secure town on the route. For these reasons, the route by way of Alexandria and Cairo is adopted; and the latter place having been reached, a journey of about seventy miles over the Desert has to be made to Suez.

Now it is a question of no small importance how this route shall be traversed in a manner at all safe and comfortable. A military officer, inured to the vicissitudes of active service, could gallop over this distance in a few hours, and could easily accommodate himself to the fare he might meet on the way; but if a regular line of communication, for passengers as well as letters, is to be established, it is obvious that so precarious a channel would not suffice. Perhaps we could not better explain the views which have been entertained of the best mode of surmounting these difficulties, than by giving a few extracts from a report made by an officer appointed to inquire into this matter. In the early part of the year 1838 one of the steam navigation companies to which we before alluded, sent Colonel Burr to Egypt, to forward certain plans for performing the overland portion of the journey from Cairo to Suez. In a letter which that officer wrote from Cairo in the month of March in that year, he thus alludes to the nature of the arrangements which he was making.

"I have nearly completed an arrangement, by which four comfortable carriages, for the conveyance of at least thirty passengers, will be set going by September next; I only await Colonel Campbell's approval to complete the thing. The advance for the purchase of the four carriages, with two baggage waggons, and forty mules, will be 1000*l.*, the property being ours, and merely lent to the contractors, who engage to keep the whole in an efficient state for at least five years, and to carry passengers in, say twenty-four hours, including halts, for 6*l.* each." After proceeding to express a hope that the Pacha would lend his countenance to the project, the Colonel details an agreement which he had made with a Cairo firm for building stations at certain distances on the line of route. From a report subsequently made by the committee of the company which had sent out Colonel Burr, it appeared, that supposing the Pacha's consent could be obtained, of which there seemed little doubt, it was proposed to build a centre station and four intermediate ones. The centre station to contain one room twenty-four feet by eighteen, and five sleeping apartments of fourteen feet by twelve, and fifteen feet high, with stabling and other requisite buildings; the whole inclosed and protected by a wall fifteen feet high, built of stone. A water-tank also to be added, sufficiently large for the use of the mules. The intermediate bungalows, or stations, were to be similar in character, but rather smaller.

The arrangements proposed as to the hours of starting and the rate of travelling were these:—*From Cairo.* If more than a sufficient number of passengers for one van are anxious to proceed to Suez, the first van to start within forty-eight hours before the departure of the steamer from Suez, and the second within twelve hours after the first. If only sufficient passengers for one van, to start thirty-six hours before the departure of the steamer; or as may otherwise be agreed on by the majority of passengers. *From Suez.* The first van to start six hours after the landing of the first lady passengers from the steamer; the second, twelve hours after the first, if the number of passengers exceed ten In the event of there being no lady passengers,

then the first van to start six hours after the landing of the first ten male passengers. Ladies to have always a prior claim as to proceeding by the first or subsequent carriages. The rate of travelling to be twenty hours actual travelling; two and a half hours stoppage at the central station; and three quarters of an hour at the other stations.

Such were the views which, in 1838, were entertained of the most feasible mode of establishing a regular route across the Desert. It was in the autumn of 1839 that Miss Roberts made this journey; and we shall now see the manner in which she performed it, and the incidents which she met with on the way. The ladies of the party, after remaining two or three days in Cairo, set off together to traverse the Desert to Suez, where the *Berenice* steamer had just arrived from Bombay. The vehicles provided consisted of donkey-chairs, one for each lady; consisting of a common arm-chair fastened into a sort of wooden tray, which projected in front about a foot, thereby enabling the passenger to carry a small basket or other package; each chair was slung by the arms to long bamboos, one on either side, and these, by means of ropes or straps placed across, were fastened upon the backs of donkeys, one in front and one behind. This formed a very comfortable vehicle; and the party were well pleased with the kind of accommodation. Besides the vehicles, there were two stout donkeys, carrying the beds and carpet-bags of the whole company; three others on which servant-men rode; and a few spare ones in case of accident on the road; while the owners or drivers of the donkeys were eight or ten in number. Thus the cavalcade proceeded, at an easy walking pace; and reached the first *bungalow*, or travellers' resting-house, by the evening of the first day. The bungalow was then in an unfinished state, being unprovided with windows; but it was sufficiently forward to furnish the required shelter. The building was approached from the front by a narrow passage, on either side of which were sleeping-rooms for travellers, as well as a kitchen, &c.; while at the farther end was stabling for the animals. The rooms were at that time unprovided with beds; but the beds which the travellers brought with them were spread out, and made as comfortable as circumstances would admit.

The party started again at nine o'clock on the following morning, with the air at a warm temperature, but moderated by a pleasant breeze which blew across the desert. On the road they were overtaken by a *kalifa*, which they had seen bivouacking in the desert the previous evening. This kalifa or party consisted of the governor of Jiddah, who was travelling to Suez with his wife and family. The lady travelled in a vehicle formed of two rude kinds of sofas or settees, canopied overhead, and having a resting-place for the feet; it was placed on the top of a camel, with a cloth curtain, to exclude the sun, and to ensure the privacy customary among Mohammedan females. The travellers, on their way to Suez, occasionally met small parties of Bedouins, distinguished by their fierce countenances glaring from beneath the large rolls of cloth twisted over their turbans. One or two, superior to the rest, were handsomely dressed, well armed, and mounted on handsomely caparisoned camels. Small as the means of defence were on the part of the travellers, the Bedouins did not attempt to plunder their baggage; the power of Mehemet Ali having infused a spirit of obedience into these men, such as pachas and governors can seldom effect.

About the middle of the day they arrived at another bungalow, where they stopped an hour or two; here they again found the kalifa which had passed them in the morning, the females of which shared with our travellers the scanty accommodation of the place. The party was soon again in motion, enjoying the curious scene which their own cavalcade must have presented. The five vehicles were sometimes abreast, giving the riders an opportunity of conversing; but more frequently they were scattered over the plain, the guides allowing the donkeys to choose their path provided its general direction were onward. Occasionally a spare donkey, or one carrying the baggage, would stray off in an oblique direction, and then the drivers were compelled to make a wide detour to bring them in again. Once or twice, too, the ropes by which a chair was fastened, would slip, and deposit the fair occupant on the ground; or a donkey would stumble and fall; but no serious accident occurred. The resting-place for the night, at about midway from Cairo to Suez, consisted of tents, the bungalow having been only just commenced. The ladies of the party occupied one tent, on either side of which were divans or raised platforms, on which to place the beds. There were other tents occupied by English gentlemen who were passing from Suez, where they had landed from the *Berenice;* and thus the desert became a kind of half-way station, (it is not far from being so in actual distance,) at which English travellers to and from India met.

The next morning, soon after they had started, the travellers met a double-bodied phaeton, drawn by two horses and two camels, having an English gentleman and a Persian within, and an Arab riding as postilion on one of the camels; this curious medley had just come from Suez, and was proceeding at a rapid rate to Cairo. These were followed by other passengers by the *Berenice*, some of whom were ladies riding in donkey-chairs, and others mounted on the backs of camels. In the middle of the day our travellers arrived at another bungalow; where they met one of the vans which had been provided for this route by the Steam Navigation Company; it consisted of a tilted cart upon springs, and was drawn by a pair of horses. Nothing farther occurred worthy of notice till they arrived at the resting-place for the night; when they were overtaken by three English gentlemen, who had wished to visit the Pyramids before proceeding onward to India, and who had crossed the desert in great haste. The whole party were to start at three o'clock in the following morning; and while all else were asleep, Miss Roberts silently left her tent by starlight, and roamed forth with an object which we will state in her own words:—"I had long desired to spend a night alone upon the desert; and without wandering to a dangerous distance, I placed a ridge of sand between my solitary station and the objects which brought the busy world to view, and indulged in thoughts of scenes and circumstances which happened long ago. According to the best authorities we were in the track of the Israelites; and in meditations suggested by this interesting portion of Bible history, the time passed so rapidly, that I was surprised when I found the people astir and preparing for our departure."

The party started at three o'clock, and did not stop till they arrived at the end of the journey, except for a few minutes at the last bungalow, which they reached at nine o'clock. It was about the middle of the fourth day, after having spent three nights and portion of four days on the road, that they reached Suez. The reader, by comparing the details just given, with the plans proposed in the early part of 1838 for the passage of the desert, will see that those plans had been acted on to a slight extent, by the establishment of one or two bungalows, and one or two vehicles to traverse the route. But many circumstances, to which we need not particularly allude here, prevented the proposed plan from being carried out in its fullest extent; and the contests which took place during the year 1840 between Mehemet Ali and the European powers put a temporary check on the prosecution of these schemes, although the Pacha, in the midst of his difficulties, seemed generally disposed to guarantee the safe conduct of English travellers across the desert. The termination of hostilities in that quarter has allowed attention to be steadily directed to this overland route; and at the present time increased facilities for travellers are being provided, by the establishment of iron steamers from Alexandria to Cairo, and of convenient vehicles and resting-places from Cairo to Suez.

We may here say a few words respecting the route from Cairo to Suez across the Desert. There are the strongest reasons for believing that a ship canal anciently existed along this route, by which a vessel could sail uninterruptedly from the Mediterranean to the Red Sea. Passages in some of the early writers clearly point to the existence of such a canal; while the researches of modern travellers have no less clearly led to the tracing of a remarkably level valley, or, if we may use the term—trough, which was once filled with water. When the French had possession of Egypt, the engineers who accompanied the army surveyed this track with much accuracy, and formed a plan for re-opening the ancient canal. It appears not improbable that if the French had retained possession of that country, they would have carried out a scheme which offered such an advantageous naval path to our Indian possessions, towards which Buonaparte was known to have directed a longing eye. As events turned out, however, the scheme was abandoned; but still it has not been forgotten; and we think that there is no impropriety or inconsistency in surmising that the time will come when one of these plans will be accomplished; viz.—the re-opening of the ancient canal from Cairo to Suez; the laying down of a railway on the very level valley which the site of this canal presents; or the establishment of a canal from the Mediterranean to Suez, altogether independent of the route by Alexandria, the Nile, and Cairo.

Section IV. Embarkation on the Red Sea.

We now proceed onward towards India. From Miss Roberts's account of Suez, it appears to be a place possessed of but few attractions:—"Distance lends no enchantment to the view at Suez. It is difficult to fancy that the few miserable buildings, appearing upon the margin of the sea, actually constitute a town; and the heart sinks at the approach to a place so barren and desolate. My donkeys carried me through a gap in the wall, which answered all the purposes of a gateway; and we passed along broken ground and among wretched inhabitants, more fit for the abode of savage beasts than men. Even the superior description of houses bore so forlorn and dilapidated an appearance, that I actually trembled as I approached them, fearing that my guide would stop and tell me that my journey was at an end." There were two hotels or lodging-houses in the town, established by the agents of the English houses connected with the steam communication with India; and in one of these hotels Miss Roberts and her companions took up their abode for the two or three days of their stay in Suez. The *Berenice*, a government steamer in which the travellers embarked for Bombay, was complained of by Miss Roberts as being sadly unfitted for the wants of the passengers; but as this is one of the circumstances which have probably been put on a better footing since that time, we will not dwell on these discomforts.

It may be desirable to take a general sketch of the Red Sea, on which we are now embarked. This celebrated sea is a very long and narrow sheet of water, extending from Suez in a direction nearly south-east to the straits of Bab-el-Mandeb. At its upper or northern extremity it is divided into two diverging points, one proceeding north-west to Suez, and called the Gulf of Suez; the other proceeding north-east to Akaba, and called the Gulf of Akaba. Between these two Gulfs is a jutting promontory on which is situated Mount Sinai and many other spots celebrated in sacred history. After having left this promontory, and entered the sea into which the two gulfs jointly enter, we have Egypt on the west side, and Arabia on the east. The Arabian side presents to us, at distances greater or less from the shore, Medina, Mecca, Mocha, and other towns; while on the African side there are few places of importance besides Cosseir and Berenice. Cosseir is the first of these towns to which we arrive; and as there are many curious circumstances connected with its position and history, we we will offer a few remarks on the subject.

Cosseir is situated on a part of the coast almost exactly parallel with the famed city of Thebes, on the Nile, at about a hundred miles distance from it; and there is evidence that there was anciently a considerable traffic in this direction. Cosseir was the sea-port of Thebes, at the time when that magnificent city was the metropolis of the Pharaohs. At the present day the road from Cosseir to Kenneh, a town on the Nile not far distant from Thebes, is spoken of as very good; indeed the obstacles to travelling seem to be so few, that Mr. Lushington, who some years ago crossed it in a journey homeward from Bombay in the depth of winter, records with high glee the gratification of enjoying an excellent Christmas dinner at the middle resting-stage of the journey, and describes the weather and the atmosphere, both during the night and day, as being bland, cheering and salubrious. Wells of good water have always subsisted about midway on the route; and it is said that excellent water has been found at other places by boring. One of the most extraordinary circumstances connected with this route is, that there are indications of what may be called a railway track having existed there in former times; that is, that an artificial level appears to have been constructed for the whole distance, as a means of diminishing friction. In the evidence given before a Committee of the House of Commons on steam communication with India, a few years ago, several witnesses gave it as their opinion, from ocular inspection, that an excellent coach or wagon road might be formed with very little trouble from Cosseir to the Nile; and Colonel Burr, to whom we have before referred as an agent of one of the companies employed in establishing a convenient route from Cairo to Suez, was also directed by the company to visit the Cosseir route, and to ascertain the practicability of building stations. We believe, however, that the Suez route has been deemed more convenient of the two, and that the route by Cosseir is at present abandoned, so far as regular passengers to or from India are concerned. Of Cosseir itself, an English traveller, who visited it three or four years ago, thus speaks:—"Cosseir is a very small harbour, only capable of holding two or three ships, which take shelter to leeward of a coral reef, on which they lay their anchors, but subject to be driven on shore in case of a sudden change of wind; but as this seldom or ever happens, we have never had any accidents. The native boats, which draw very little water, lie close in to the town, and take their cargo of grain in with great facility. The town consists of about three hundred houses, ill built; and the inhabitants are merely those who are employed in shipping off grain, and a few who keep the bazaar. The English agent is a civil obliging creature, a son of the one at Genneh. Waghorn has a packet agent here: an Italian doctor serves him, Signor Morice, who stands upon a wooden leg..... A large caravan of camels, which were returning to Genneh after bringing over grain, afforded us a cheap opportunity of getting to the Nile. We hired three, for which we paid five piastres, each ten-pence. We bade adieu to Cosseir with gladness; and after the second hour of our journey, we saw the Red Sea for the last time. The caravan consisted of eighty camels."

At some distance southward of Cosseir, on the African shore of the Red Sea, is situated the remains of the ancient port of Berenice. As Cosseir was the site of the sea-port to Thebes under the dynasty of the Pharaohs, so was Berenice the metropolitan sea-point in the times of the Greek and Roman supremacy. The route from Berenice to Thebes appears never to have been used since the times just referred to, although Belzoni describes it as being one of the best harbours in the Red Sea. The town is in a state of complete ruin; and it does not appear that there are sufficient advantages attending this route to render a reconstruction desirable.

When we have proceeded sufficiently southward along the Red Sea to be opposite Mecca, we find on the Arabian coast the sea-port town of Jedda. It presents a very imposing appearance from the sea; but a nearer approach dissipates the favourable impression which its appearance from a distance is calculated to make, as is indeed the case with most Oriental towns. The port is formed by successive crescents of coral, behind which vessels can ride at anchor in perfect security, even in the roughest weather. As these reefs only rise to the water's edge, they afford shelter only from the sea; so that, while a vessel rides in perfect safety in smooth water, she remains exposed to the winds. When the wind blows strongly, the side of the reefs exposed to its force becomes fringed with a white feathery curl, which increases in height on their edges as they extend seaward. The houses of the town are constructed of madrepore, and consist of several stories; but from irregularity of design, and a certain dirtiness in their external appearance, they are not so pleasing as the houses in some other parts of Arabia. The windows are latticed, and the projecting balcony, so general an ornament to the buildings of the East, is here left unpainted, giving the dwellings a neglected and decayed appearance. The doorways and windows are in every variety of the Arabesque style. Like all Oriental towns, the streets are exceeding narrow, so that in some of them the sun cannot shine more than one hour of the day, and only at one season. The bazaars are well supplied; and, during the pilgrimage to Mecca, filled with strangers from all the Moslem countries of the East. The shops are small cells, about eight feet square, in which the merchant sits amidst his wares; the buyer stands in the street, and where the bazaar is not covered, a small mat or piece of sail-cloth protects him from the sun. Merchants, pilgrims, dervishes, and beggars, crowd the bazaars to excess.

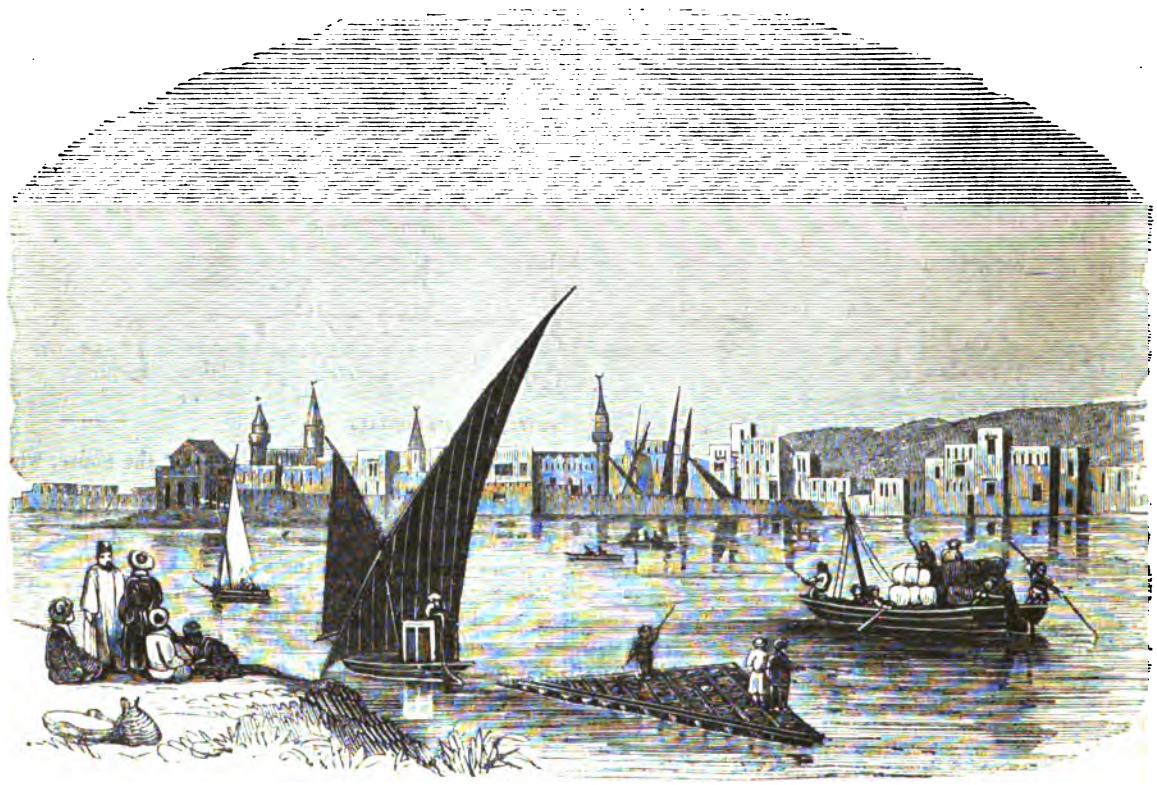
Shortly after we have passed the sea-port and town of Mocha, (for a description of which we refer to our No. 243), we come to the strait of Bab-el-Mandeb, which is the narrow channel by which the Red Sea empties its waters into the Indian Ocean. It is formed by two projecting or approaching promontories of the Arabian and Abyssinian shores. From Cape Bab-el-Mandeb on the Arabian side, to the Abyssinian coast, the nearest distance is sixteen miles, which is therefore deemed the width of the strait. At a few miles distance from the Arabian shore is a little island called Perim, which divides the strait into two parts, of which the eastern is called the Little Strait, and the western the Great Strait. The Little Strait is the one most generally used by seamen, principally because the depth of water is such as to allow of anchorage. The Large Strait, which is about nine or ten miles wide, is so very deep, that a rope of a hundred fathoms will not reach the bottom. The name of the strait, Bab-el-Mandeb, which, in Arabic, signifies the "Gate of Tears," seems to have been given in

consequence of the dangers to which small and light vessels are exposed in a narrow sea, surrounded by rocky shores, and subject to frequent gusts of wind. Although the Little Strait is four miles wide, yet the available width for navigation is less than a mile. A recent voyager, who entered the straits in an Arabian vessel, says, "It fell calm, and the current drifted us about in the narrowest part of the strait, which is hardly half a mile wide. The moon rose, and we were in some degree relieved from our anxiety, as it enabled us to judge our distance from the shore, and ascertain for certainty if we were taking the right course, which is hereabouts rather difficult to discover in the dark. Our jolly-boat was lowered, and we towed the vessel off the land, which we had approached so near, that, should any wind have blown, it would have been kept from catching our sail by the rocks, which frowned above us. The ancient mariners, by the names they have given to the different headlands and islands here and in the neighbourhood, have left us an everlasting memorial of the dangers attending the Eastern maritime commerce in those times. The entrance of the sea is called the Gate of Sorrow or Weeping; the Cape itself, Affliction; the extreme east-point of Africa, which must have been the last land they lost sight of, the Cape of Burial."

We at length arrive at Aden situated a short distance without the strait, and in the direct route from thence to Bombay; and here we join company again with Miss Roberts and her fellow travellers, whom we left at the upper part of the Red Sea. The party landed at Aden, and were conveyed in palanquins to the place where the cantonments were situated, now fast advancing towards the dignity of fortifications. The road led for a mile or two along the sea-shore, with high crags piled on one side; after which the party ascended a height, which led to an aperture in the hills called the Pass, around which was wild but beautiful scenery. The narrow and inclosed pass led down a rather steep declivity to a sort of basin, surrounded on three sides with lofty hills, and on the fourth by the sea. It will be remembered, from the circumstances which we detailed in the early part of the paper, that about the time when Miss Roberts visited Aden, the British settlements had not been freed from the hostile attacks of the Arabs. The following is that lady's account of the place as she found it at the time of her visit:—"At first sight of Aden, it is difficult to suppose it to be the residence of human beings, and more especially of European families. The town, if such it may be called, consists of a few scattered houses of stone, apparently loosely put together, with pigeon-holes for windows, and roofs which, being flat, and apparently surrounded by a low parapet, afford no idea of their being habitable. It is difficult to find a comparison for these dwellings, which appeared to be composed of nothing more than four walls, and yet to judge, from the apertures, contained two or more stories. The greater numbers were inclosed in a sort of yard or compound, the fences being formed of long yellow reeds; the less substantial dwellings were entirely made of these reeds, so that they looked like immense crates or cages for domestic fowls. My palanquin at length stopped at a flight of steps hewn out of the rock; and I found myself at the entrance of a habitation, half-bungalow, half-tent; and certainly, as the permanent abode of civilized beings, the strangest residence I had ever seen. The upright and framework were made of reeds and bamboos, lined with thin mats, which had at one time been double, but the harbour thus afforded for rats being found inconvenient, the outer casing had been removed." The explanation of this apparently strange state of things is this; that the Indian government had not at that time fixed upon the site intended for the station offices, &c., at Aden, and the European inhabitants delayed building their houses, which were to be durable stone structures, until the decision was made. Since that period, much progress has been made in developing the resources of Aden, and establishing it as a valuable dependency of the British crown.

Here we bring to a conclusion our notice of the interesting points connected with a steam voyage to India. From the peninsula on which Aden is situated, no land intervenes till the traveller arrives at Bombay; he leaves Socotra, an island which was at one time to have been used as a coal depôt instead of Aden, on the right, and the southern coast of Arabia, together with the entrance to the Persian Gulf, on the left. The importance of Aden consists partly in the fact, that, from that port a steamer can be supplied with fuel and all other stores for the voyage from thence to Bombay.

A little reflection on the details which have been given in this paper will convince the reader, that the grand project of steam communication with India, (for grand it certainly is,) is still only in its infancy, and that we may look forward to a successive chain of improvements in every part of the commercial machinery by which it is accomplished.



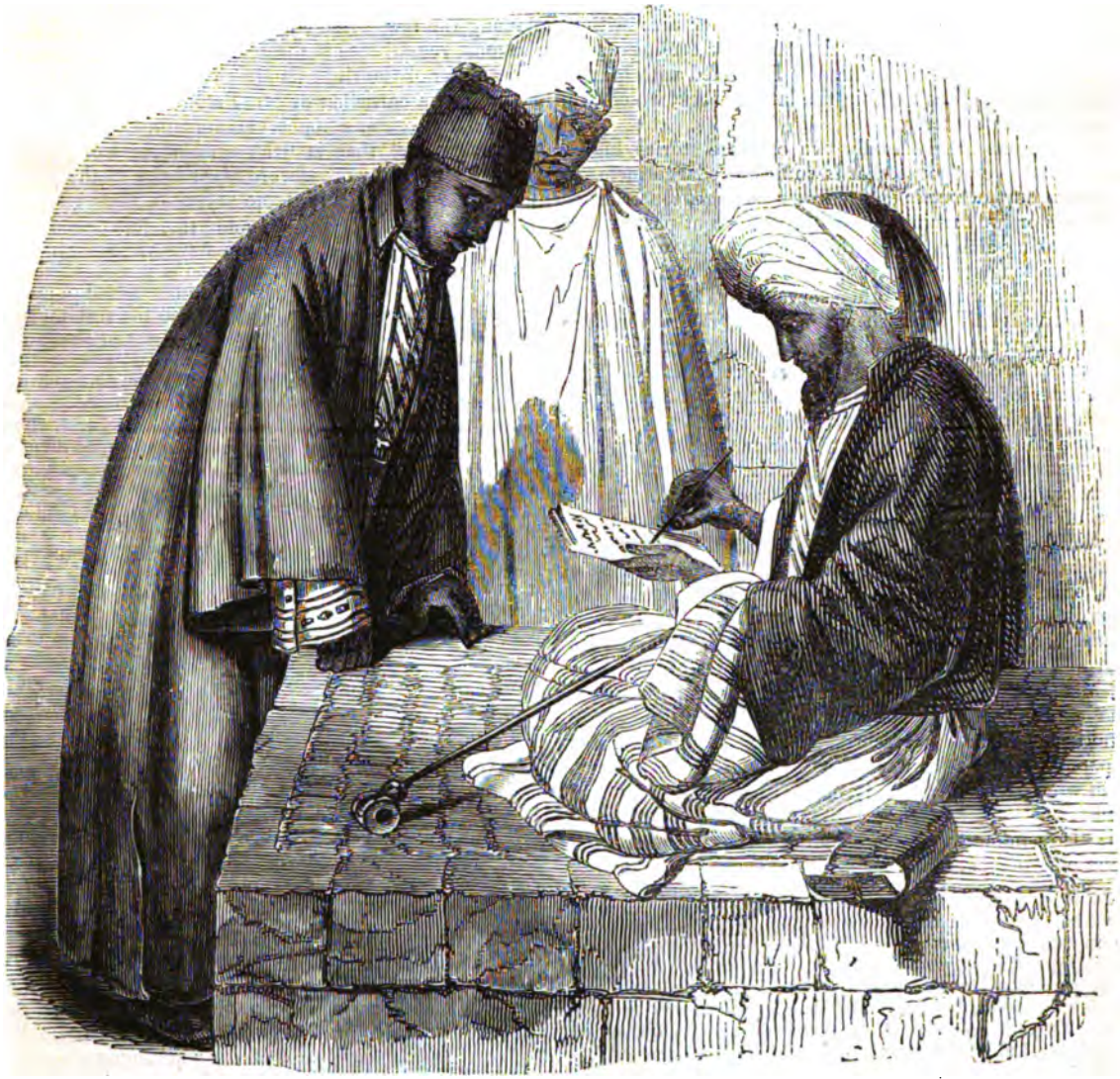
SURE.

LONDON · Published by JOHN W. PARKER, West Strand, and sold by all Booksellers.

Saturday Magazine.

No. 589. SEPTEMBER 4TH, 1841. { PRICE ONE PENNY.

SKETCHES OF CAIRO. II.



A TURKISH EFFENDEE WRITING A MEMORIAL.

THE houses of Cairo are generally of brick, cased externally, and often internally, with the soft calcareous stone of the neighbouring mountain, which when newly cut is of a light yellowish hue, but its colour soon darkens. The alternate courses of the front are sometimes coloured red and white, particularly in large houses, as is the case with most mosques. The superstructure projects about two feet: the roof is flat and covered with plaster.

The houses are rich in that description of ornament known to architects as the *Arabesque*, in which much taste and fancy are often displayed. Entrances to houses are often richly adorned, and over the doors is frequently sculptured the invocation *Ya Allah!* "O God!" and the words "The Creator is the Everlasting," or "He is the Creator, the Everlasting," painted in large black and white characters upon the door, both as a charm, and to remind the master of the house, whenever he enters it, of his own mortality.

Many of the tradesmen also place over their shops (generally upon the hanging shutter turned up in front) a paper inscribed with the name of God or that of the Prophet, or both, or the profession of the faith, ("There is no deity but God: Mohhammad is God's apostle,) the *bismillah*, ("In the name of God, the compassionate, the merciful,") or some maxim of the Prophet, or a verse of the Ckooran, as "Verily we have granted thee a manifest victory," or an invocation to the Deity, such as "O thou Opener [of the doors of prosperity or subsistence]! O thou Wise! O thou Supplier of our wants! O thou Bountiful!" This invocation is often pronounced by the tradesman when he first opens his shop in the morning, and by the pedestrian vender of small commodities, bread, vegetables, &c., when he sets

out on his daily rounds. It is a custom among the lower orders to put the first piece of money that they receive in the day to the lips and forehead before it is consigned to the pocket.

The apartments on the ground-floor next the street are furnished with small wooden grated windows, placed sufficiently high to prevent the passengers, even on horseback, from seeing through them. The upper windows project a foot or two, and are mostly formed of turned wooden lattice-work, which is so close that it shuts out much of the light and sun, and screens the inmates from view, while at the same time it admits the air. A little projecting window is sometimes formed so as to be constantly exposed to a current of air: within this are placed porous earthen bottles, for cooling water by evaporation. Many houses are furnished with glazed window-frames placed within the lattice-work, which are closed during winter.

The houses are generally two or three stories high; and almost every house that is sufficiently large incloses an open court, which is entered by a passage, constructed with one or two turnings, in order to prevent passengers from looking along it. In this passage, just within the door, is a long stone seat, built against the back or side-wall, for the porter and other servants. In the court is a well of slightly brackish water, which filters through the soil from the Nile, and on its most shaded side are commonly two water jars, which are replenished daily with water of the Nile, brought in skins. The principal apartments look into this court.

For a minute description of the various apartments, and the general domestic economy of the houses of Cairo, we refer the reader to Mr. Lane's valuable work. In the plan of almost every house there is an utter want of regularity. The apartments are generally of different heights, so that a person has to ascend or descend one, two, or more steps, to pass from one chamber to another adjoining it. The principal aim of the architect is to render the house as private as possible, particularly that part of it which is inhabited by the females of the establishment, and not to make any window in such a situation as to overlook the apartments of another house. Another object of the architect in building a house for a person of rank or wealth is to make a secret door, from which the tenant may make his escape, in case of danger from an arrest, or an attempt at assassination, and it is also common to make a hiding-place for treasure in some part of the house.

In every point of view, (says Mr. Lane,) Musr (or Cairo) must be regarded as the first Arab city of our age, and the manners and customs of its inhabitants are particularly interesting, as they are a combination of those which prevail most generally in the towns of Arabia, Syria, and the whole of Northern Africa, and in a great degree in Turkey. There is no other place in which we can obtain so complete a knowledge of the most civilized classes of the Arabs.

The term *Arab* is used, wherever the Arabic language is spoken, only to designate the Bedawees collectively: in speaking of a tribe or of a small number of those people, the word Orban is also used, and a single individual is called *Bedawee*. In Cairo the distinction of tribes is almost wholly lost, the native Mooslim inhabitants calling themselves commonly *El Musreeyeen*, *Owlad Musr*, and *Owlad el-Beled*, which signify "people of Musr," "children of Musr," and "children of the town."

The Mooslim Egyptians are described as a good-looking race of men, about the middle height, robust and well-proportioned, with fine open foreheads, and a half-smiling expression about the mouth which is rather prepossessing. It is difficult for the stranger to imagine how the poor little children that are seen with meagre skinny limbs, can ever acquire the well-built muscular frame of the young men.

Travellers have been struck with the number of men in Egypt who are either wholly or partially blind. Many suffer from ophthalmia and other diseases, but the practice was long common for mothers to extirpate the right eyes of their male children, to unfit them for military service. The Pacha adopted many plans for stopping this horrid practice, and none succeeded until he ingeniously ordered two regiments of one-eyed soldiers to be raised: the conscription being therefore no longer to be evaded by this mutilation, the custom ceased.

The costume of the Mooslims will be understood better by referring to figures than to printed descriptions. Among the few personal ornaments worn by the men the most remarkable is the seal-ring which decorates the little finger of the right hand. This ring is generally of silver with a cornelian or other stone, upon which is engraved the wearer's name, accompanied by the words "his servant," that is "the servant or worshipper of God," and often by other words expressive of the person's trust in God, &c. Mr. Lane says:—

The Prophet disapproved of gold; therefore few Mooslims wear gold rings, but the women have various ornaments (rings, bracelets, &c.) of that precious metal. The seal-ring is used for signing letters and other writings, and its impression is considered more valid than the sign-manual*. A little ink is dabbed upon it with one of the fingers, and it is pressed upon the paper, the person who uses it having first touched his tongue with another finger, and moistened the place in the paper which is to be stamped. Almost every person who can afford it has a seal-ring, even though he be a servant. The regular scribes, literary men, and many others, wear a silver, brass, or copper *dawáyeh*, which is a case, with receptacles for ink and pens, stuck in the girdle†. Some have, in the place of this, or in addition to it, a case-knife, or a dagger.

The Egyptian usually takes his pipe with him wherever he goes, (unless it be to the mosque,) or it is carried by a servant, although it is not common to smoke during a ride or a walk. He thrusts the tobacco-purse in his bosom; as also a handkerchief embroidered with coloured silks and gold, and neatly folded. Many persons of the middle orders who wish to avoid being thought rich, conceal their rich dress under a long black cotton gown, such as is worn by the lower classes.

In all Mohhammadan countries the most important part of the male attire is the turban, and the respect paid to it is very great. Its colours and forms are often prescribed by law, and serve as distinguishing marks whether of respect or aversion. In the houses of the more wealthy classes there is usually a particular chair devoted to its reception at night, which chair is never used for any other purpose. As an example of the respect paid to the turban, it was related to Mr. Lane that an *alim* (a man of science or learning) being thrown off his donkey in the streets of Cairo, his turban fell off and rolled along for several yards; whereupon the passengers ran after it, crying, "Lift up the crown of El-Islam!" while the poor alim, whom no one came to assist, called out in anger, "Lift up the *sheykh* (master or doctor) of El-Islam!"

As it is highly indecorous in a woman to discover her features except to her immediate relations, the veil is in constant use: this is a long narrow piece of muslin, suspended by a gold ornament from the upper part of the forehead, and covering the nose and lower half of the face: the eyes and part of the forehead being exposed. The expression of the eyes is considerably heightened by staining the eyelids with a black powder, called *kohl:* this is the smoke-black produced by burning an aromatic resin, or the shells of almonds. The kohl is applied with a small probe of wood, ivory, or silver, tapering towards the end, but blunt: this is moistened some-

* Therefore, giving the ring to another person is the utmost mark of confidence. See Genesis xli. 42.

† This is a very ancient custom. See Ezekiel ix. 2 3, 11.

times with rose-water, then dipped into the powder, and drawn along the edges of the eyelids. This custom prevailed among the ancient Egyptians, as is shown by the sculptures and paintings in the temples and tombs; and kohl-vessels, with the probes, and even the remains of the black powder, have been found in the ancient tombs.

Females are also accustomed to stain certain parts of their hands and feet with the leaves of the hhenna tree, or Egyptian privet, which impart a yellowish red, or deep orange colour. Many thus dye only the nails; others extend the dye as high as the first joint; some also make a stripe along the second joints: it is common also to dye the whole of the inside of the hand and sole of the foot. The colour is not permanent, but requires to be renewed after two or three weeks.

Many of the females of the lower orders adorn their persons with indelible marks of a blue or greenish hue. The operation is performed with several needles tied together: with these the skin is pricked in the desired pattern; some smoke-black mixed with milk is then rubbed in, and about a week after, before the skin has healed, a paste of the pounded fresh leaves of white beet or clover is applied, which gives a blue or greenish colour to the marks.

Parents in Egypt treat their children with the utmost love and tenderness; and however much the son is caressed and fondled, he generally displays a most profound and praiseworthy respect for his parents. Disobedience to parents is considered by the Mooslims as one of the greatest of sins, and accordingly an undutiful child is very seldom heard of among the Egyptians or the Arabs. Sons scarcely ever sit or eat, or smoke in the presence of the father, unless requested to do so; and they often even wait upon him and upon his guests at meals, and on other occasions: and they do not cease to act thus when they have become men.

But although the children are objects of so much solicitude, they are, with the exception of those of the wealthier classes, generally very dirty and shabbily clad. Mr. Lane says:—

The stranger here is disgusted by the sight of them, and at once condemns the modern Egyptians as a very filthy people, without requiring any other reason for forming such an opinion of them; but it is often the case that those children who are most petted and beloved are the dirtiest and worst clad. It is not uncommon to see, in the city in which I am writing, a lady shuffling along in her ample *to'b* and *hhab'arah* of new and rich and glistening silks, and one who scents the whole street with the odour of musk or civet as she passes along, with all that appears of her person scrupulously clean and delicate, her eyes neatly bordered with kohl, applied in the most careful manner, and the tip of a finger or two showing the fresh dye of the hhenna, and by her side a little boy or girl, her own child, with a face besmeared with dirt, and with clothes appearing as though they had been worn for months without being washed. Few things surprised me so much as sights of this kind on my first arrival in this country. I naturally inquired the cause of what struck me as so strange and inconsistent, and was informed that the affectionate mothers thus neglected the appearance of their children, and purposely left them unwashed, and clothed them so shabbily, particularly when they had to take them out in public, *from fear of the evil eye*, which is excessively dreaded, and especially in the case of children, since they are generally esteemed the greatest of blessings, and therefore most likely to be coveted.

The group shown in our frontispiece is taken from one of the prints in Mr. Hay's noble volume already referred to (p. 50), where it is also thus described:—A Turkish Effendee seated in a *wekaleh*, or building chiefly designed for the reception of merchants and their goods, writing a memorial for a client who appears in the *gibbeh*, or long cloth robe, over the *kuftán*, or silken vest, and with his *dawáyeh* or ink-horn in his girdle. The Effendee merely wears the saltah, or jacket, over his kuftán, and is seated upon one of the coarse mats of the country, another mat being used as a screen behind him. His *zarf*, or paper case, with his pipe, are beside him.

The writing paper used in Egypt is thick and glazed; it is chiefly imported from Venice, and glazed in Egypt. The ink is very thick and gummy. Reeds are used instead of pens; and they suit the Arabic character much better. The Arab, in writing, places the paper upon his knee, or upon the palm of his left hand, or upon what is called a *mis'ned'eh*, composed of a dozen or more pieces of paper attached together at the four corners, and resembling a thin book, which he rests on his knee. His ink and pens are contained in his *dawáyeh*, together with the penknife, and an ivory instrument upon which the pen is laid to be nibbed. He rules his paper by laying under it a piece of pasteboard with strings strained and glued across it, and slightly pressing it over each string. Scissars are included among the apparatus of a writer: they are used for cutting the paper: a torn edge being considered as unbecoming.

THE GOOD MISSIONARY.

He left his Christian friends and native strand,
By pity for benighted men constrained;
His heart was fraught with charity unfeigned;
His life was strict, his manners meek and bland.
Long dwelt he lonely in a heathen land,
In want and weariness,—yet ne'er complained;
But laboured that the lost sheep might be gained,
Not seeking recompense from human hand.
The credit of the arduous works he wrought
Was reaped by other men who came behind:
The world gave him no honour—none he sought,
But cherished Christ's example in his mind.
To one great aim his heart and hopes were given,—
To serve his God, and gather souls to Heaven.

PRINGLE.

The joy, resulting from the diffusion of blessings to all around us, is the purest and sublimest that can enter the human mind, and can be conceived only by those who have experienced it. Next to the consolations of divine grace, it is the most sovereign balm to the miseries of life, both in him who is the object of it, and in him who exercises it; and it will not only soothe and tranquillise a troubled spirit, but inspire a constant flow of good humour, content, and gaiety of heart.—BISHOP PORTEUS.

The tender parent, whose breasts have nourished, and whose prayers have blessed us, slumbers in the dust. The lovely child, whose life and qualities were just expanding to view, is cropped by an untimely blast. The friend of our bosoms, who was dear to us as our own souls, is gone, irrecoverably gone, to that bourn, whence no traveller returns. We think with sadness, that they once were. We sigh with anguish, that they will be here no more. But we shall go to them. We shall lie down in the grave together, and our ashes shall be mingled with theirs. In the morning of the resurrection, they will revive together. We shall appear with them before the throne of the Lamb. If we have been as little children, we shall enter with them into the kingdom of Heaven, where there shall be no more sorrow, separation, nor death; and God shall wipe away all tears from every eye.—DEHON.

The strict honesty of the Bedawin among themselves is proverbial, however little regard they may have to the right of property in others. If an Arab's camel dies on the road, and he cannot remove the load, he only draws a circle in the sand round about, and leaves it. In this way it will remain safe and untouched for months. In passing through Wady Sa'l on our way to 'Akabah, we saw a black tent hanging on a tree: Tuweilib said it was there when he passed the year before, and would never be stolen. Theft, he said, was held in abhorrence among the Táwarah, but the present year the famine was so great that individuals were sometimes driven to steal food. He had just returned from Egypt with a camel-load of grain for his family, which he had put into one of their magazines as a place of safety, but it had all been stolen. Burckhardt relates that he was shown in Wady Humr a point upon the rocks, from which one of the Táwarah, a few years before, had cast down his son headlong, bound hand and foot, for an offence of the very same kind.—ROBINSON'S *Palestine*.

SIEGE-PIECES.

Once more by Newark's castle-gate,
Long left without a warder,
I stood, looked, listened, and with Thee,
Great Minstrel of the Border.—WORDSWORTH.

NEWARK SIEGE-PIECE.

IN addition to the various sorts of money, both foreign and domestic, which we have considered in previous articles, we must now say a few words respecting those remarkable specimens of coin termed SIEGE-PIECES. They sometimes come under the appellation of OBSIDIONAL money; because these pieces are made to serve the purpose of regular money in a town which is in a state of siege, or so blockaded as to be cut off from communication with the rest of the country.

The usage of coining money for the immediate use of a blockaded town is very ancient, and the pieces thus struck generally bear in their fabrication and material, evidences of the calamitous and bereaved condition which gave rise to their existence. They are mostly of bad metal, and rudely formed; an observation to which some exceptions of course occur, but they are not numerous. The shape of these coins, or medals, varies:—sometimes they are round, sometimes oval, and sometimes square; occasionally, even octagon or triangular, &c. The type and inscriptions vary equally. Some are engraved on both sides, which, however, is rare; by far the greater part having no reverse. The arms of the besieged city are often found on them, and sometimes those of the sovereign or governor; but it is most common to see the *name* of the town only (either entire or abridged), with the date and value. The earliest specimens of this kind of money at present known, are those which were struck at the commencement of the sixteenth century, in Italy, at the sieges of Pavia and Cremona, under Francis the First. In 1529, a mint of this description was formed at Vienna, then besieged by the Turkish Sultan, Soliman the Second. The first war between Spain and Holland produced a considerable quantity of obsidional coins. It is scarcely necessary to observe, that these coins had merely a temporary and local value, like the *Tradesmen's Tokens** already described. They did not, therefore, pass into perpetual or general currency; but were in fact a sort of token or obligation contracted by the governor or the magistrates of the blockaded place, to meet the exigencies of the particular time.

We cannot but feel interested in remembering, that much of this obsidional money was put out by the Royalists, during the unhappy troubles and commotions which marked the reign of Charles the First. It is the more necessary for us to particularize, as we here refer back to the most engrossing times and events of our national history.

In regard to the unfortunate monarch just mentioned, we are told, that the unhappy situation of the king's affairs might be traced by his money, which grew worse and worse in the stamp, till at last they hardly deserved the name of *coins;* for they seemed to be rather the work of a smith (as perhaps they were), than of an engraver and coiner; it being manifest they were coined in the greatest hurry and confusion.

The principal English siege-pieces, of which specimens have come down to our times, are those stamped at Newark in 1643 and 1646, having the form of a lozenge, as may be seen at the head of this paper. Those stamped at the siege of Carlisle in 1645, are of an octangular shape. Of the Pontefract pieces, some are round, some octangular, and some lozenge-shaped. Another sort of money consisted merely of bits of silver-plate about an inch and a half long, with a rude representation of a castle stamped upon it, as that of Scarborough, as may be seen in the cut at the end of this article.

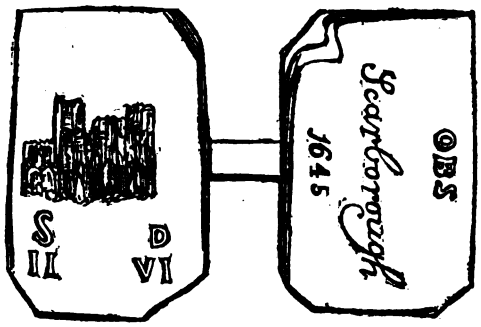
Newark, whose ancient castle, now in ruins, Wordsworth visited with his brother-poet, Sir Walter Scott, was held by a body of Royalists under the command of Sir John Henderson, at the beginning of the civil war. This town is in Nottinghamshire, and stands on an arm of the river Trent. In 1644, it was besieged by a body of Parliamentary forces under Sir John Meldrum and Lord Willoughby of Parham. Prince Rupert, advancing to relieve the place, surprised the besieged by the rapidity of his march, drove part of their forces over the Trent, and compelled another portion to capitulate, with all their artillery and ammunition. In the winter of 1644-5, it was again besieged by the Parliamentarians, but without success, the garrison having been relieved by Sir Marmaduke Langdale, who was sent by Prince Rupert for that purpose. The troops at Newark, now under Sir Richard Byron, being thus relieved from siege, were of material service to the King's cause in this part, beating some Parliamentary detachments, and keeping their posts in a state of alarm. Among other services, a detachment from this garrison assisted at the storming of Leicester in 1645. Not long after his defeat at Naseby, the king was at Welbeck, in the northern part of the county, and marched northward to Doncaster, with the view of joining Montrose in Scotland. Upon the arrival of a body of Scots, however, at Rotherham, the king retired to Newark, whither Sir Marmaduke Langdale had retreated after the battle of Naseby, in 1645. From Newark the King marched to Oxford, but was again at Newark in October, after the same year; and it was there that he was deserted by his nephews Rupert and Maurice, and by several of his officers. In November, being pressed by the approach of the Scots under the Earl of Leven, and by a body of Parliamentarians under Poyntz, from the west, he withdrew to Oxford. Newark was forthwith besieged by the Scots; and, in May, 1646, the King surrendered himself at Southwell to the Scotch commissioners, by whom he was conducted to the besiegers' quarters. The day after his arrival, Newark was delivered up by his orders.

The ancient and stupendous castle, once the glory, and still the ornament of Scarborough, was probably built in the reign of King Stephen. During the civil wars in the calamitous reign of Charles the First, this castle was twice besieged, and taken by the Parliamentary army. The first siege lasted for twelve months; and Sir John Meldrum, by whom the forces of Parliament were commanded, fell before the works. The command of the besieging army then devolved upon Sir Matthew Boynton, to whom Sir Hugh Cholmley, the governor, was obliged to surrender, on the 22nd of July, 1645. Colonel Boynton, the successor of the baronet, having declared for the King, the castle once more came into the hands of the Royalists; but, the garrison growing mutinous, the colonel was obliged to capitulate, and, on the 19th of December, 1648, the fortress was again surrendered to Parliament, and taken possession of in their name by Colonel Bethel. The castle, sharing the fate of its fellows, was dismantled by order of Parliament.

Scarborough is in the North Riding of Yorkshire,

* See Vol. XVII. p. 63, of this work.

and is situated in the recess of a beautiful bay on the shore of the German Ocean.



SIEGE-PIECE OF SCARBOROUGH

HOUR-GLASS AND BIBLE.

LOOK, Christian! on thy BIBLE, and that glass,
Which sheds its sands through minutes, hours, and days,
And years; it speaks not: methinks it says
To every human heart,—"So mortals pass
On to their dark and silent grave!" alas!
For man:—an exile upon earth he strays,
Weary, and wandering through benighted ways;
To day in strength, to-morrow like the grass
That withers at his feet. "Lift up thy head,
Poor pilgrim, toiling in this vale of tears;
That Book declares whose blood for thee was shed,
Who died to give thee life; and though thy years
Pass like a shade, pointing to thy death-bed,
Out of the deep thy cry an angel hears,
And by his guiding hand thy steps to Heaven are led."

BOWLES.

IN accordance with a former promise, the old man (the Superior of the convent of Mount Sinai) put into our hands a small quantity of the manna of the peninsula, famous at least as being the successor of the Israelitish manna, though not to be regarded as the same substance. According to his account it is not produced every year; sometimes only every five or six years, and the quantity in general has greatly diminished. It is found in the form of shining drops on the twigs and branches (not upon the leaves) of the Turfa, (*Tamarix Gallica mannifera* of Ehrenberg,) from which it exudes in consequence of the puncture of an insect of the coccus kind, (*Coccus manniparus* of the same naturalist.) What falls upon the sand is said not to be gathered. It has the appearance of gum, is of a sweetish taste, and melts when exposed to the sun or to a fire. The Arabs consider it as a great delicacy, and the pilgrims prize it highly, especially those from Russia, who pay a high price for it. The Superior had now but a small quantity, which he was keeping against an expected visit from the Russian consul-general in Egypt. Indeed, so scarce had it become of late years, as to bear a price of twenty or twenty-five piastres a pound.

Of the manna of the Old Testament it is said:—"When the dew that lay was gone up, behold, upon the face of the desert a small round thing, small as the hoar-frost on the ground,—and it was like coriander-seed, white; and the taste of it was like wafers with honey. And the people gathered it, and ground it in mills, and beat it in a mortar, or baked it in pans, and made cakes of it, and the taste of it was as the taste of fresh oil. And when the dew fell upon the camp in the night, the manna fell upon it." Of all these characteristics not one is applicable to the present manna. And even could it be shown to be the same, still a supply of it in sufficient abundance for the daily consumption of two millions of people would have been no less a miracle.—ROBINSON'S *Palestine*.

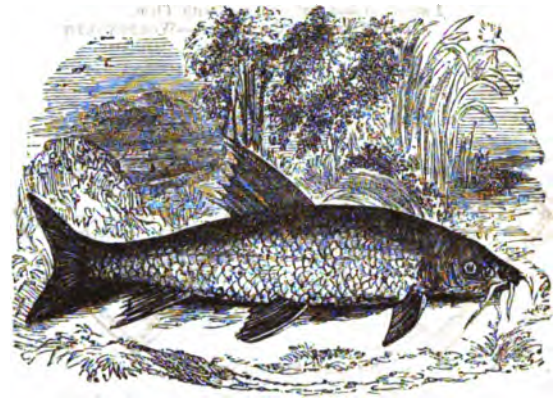
A MAN is seldom, if ever, unhappy for not knowing the thoughts of others; but he that does not attend to the motions of his own is certainly miserable.—MARCUS ANTONINUS.

WHEN to the angel's native home
The Father bids his children come,
Bids tears be dried, and sins forgiven,
Infant! of such as thou, is Heaven!—CROLY.

FRESH-WATER FISH.

VII.

THE BARBEL. (*Cyprinus Barbus.*)



THE name of this fish is derived from the *barbs*, *wattles*, or *cirri*, attached about its mouth. Many other fish are thus cirrated, and it appears probable that all such are ground-feeders, that is, they seek their food close to the bottom. In such genera as have these soft fleshy processes very highly developed, as in most of the *Siluridæ*, or cat-fish, they are employed to decoy others upon which they prey. The cat-fish, concealed from observation in the hollows of the bank, throws out his long cirri, which, being flexible, are mistaken for worms by other smaller fish, which are thus brought within reach of their true owner. They are much shorter among the cod-fish; and but slightly developed in the tench family. The long appendage rising from the nose of the frog-fishes (the genus *Lophius* of Linnæus), is analogous to these cirri.

It is probable, (says Mr. Swainson,) that these amphibious-looking creatures are the most imperfect swimmers in the whole class: and being carnivorous, this inaptitude for pursuing their prey is made up to them by a very long filament rising from the head, and terminated by a flat spoon-shaped enlargement, so as to bear a ludicrous resemblance to a fishing-line with a bait at the end: the fish lurks in its hole, and throws out this natural line, and thus attracts its prey. Its vulgar name of fishing-frog is, therefore, peculiarly expressive; for it not only angles, but it is of that type which represents the amphibious frogs among the aberrant fishes.

The term *barbel* seems to have been derived from the Latin *barba*, a beard; or, rather, *barbatulus*, having a little beard: thus Cicero speaks of the *Barbatulus mullus*. The barbel is called *barbello* in Italy; *barbeau* in France, where the diminutive *barbillon* is used to express a little barbel. The term barbel is also used in heraldry, but in a more extended sense; for the comb and wattles of the cock are said to be *barbel*, when of a different colour from the rest of the body. The fish barbel, in the coat of Bar, forms one of the quarterings of the arms of Margaret of Anjou, Queen of Henry the Sixth, and founder of Queen's College, Cambridge. She was daughter of René, duke of Anjou, titular king of Jerusalem. These arms are very beautifully painted in glass in the windows of Ockwells, in Berkshire*.

The cirri of the barbel are four in number, two hanging from the angles of the mouth, and two rather shorter attached to the upper jaw near the snout. This fish is remarkable for the great extension of the upper jaw beyond the lower, and this formation probably assists the animal in stirring up the ground in search of worms and insects.

The barbel is sometimes called the *bluish-white carp*: it is a handsome fish; its colour is of a slight silvery gray, with a darker cast on the upper parts; the scales middle-sized, rounded, and well-defined; the dorsal fin

* For an account of this beautiful mansion, see *Saturday Magazine*, Vol. XVI., p. 90.

is rather small than large, situated on the middle of the back, and of a bluish-brown colour, with the second ray extremely strong, sharp, and serrated on both sides; the pectoral and ventral fins are pale brown and tipped with yellow; the tail is dull, purple, and forked; the snout or upper-lips reddish; the lateral line * straight or nearly so, and punctated with minute black dots. Mr. Blaine says, that—

There is to be observed (in full-grown barbels particularly) an incurvation of the last upper ray of the caudal fin or tail. With this the snared fish is able to make a very forcible attack on the line which holds him by a tail-stroke, in which this spinous hook first catches and then cuts it, and such a blow he will very frequently give if the line be allowed to slacken. The serrated dorsal spine, which bounds the second ray of that fin, forms also another offensive weapon both against nets and lines, and sometimes the hands of the angler suffer unless he be careful.

Walton also remarks, that—

The barbel affords an angler choice sport, being a lusty and a cunning fish; so lusty and cunning as to endanger the breaking of the angler's line, by running his head forcibly towards any covert, or hole, or bank, and then striking at the line to break it off with his tail; and also so cunning to nibble and suck off your worm close to the hook, and yet avoid the letting the hook come into his mouth.

The barbel is to be found in most of our rivers, as also in those of Middle and Southern Europe. Its most favourite haunts are in currents of moderate rapidity, which flow over gravelly beds and among large stones. These fish are gregarious, and lurk in shoals under the shelter of overhanging banks, or among the weed-beds of deep waters.

Under bridges in the strongest currents they may be seen, and counted one by one, apparently lying as fixtures, which has given rise to the custom of letting down hooks fixed on a lead, which, dropping among them occasionally, fastens one in a *foul* manner, as it is termed. They are unsuspicious in the extreme, and will often suffer themselves while grovelling in the gravel, to be caught up in this way. Piles, weirs, and locks, are likewise favourite resorts of theirs. Barbel are much in motion during the night, at which time they principally seek their food, for which their small penetrating eye gives facilities; and, if our observations are correct, the internal organization of their visual organ particularly fits it for crepuscular vision: that they are gifted with nocturnal vision in an eminent degree is certain, from the readiness with which they distinguish and take a bait during night-fishing. BLAINE.

While the barbel is boring and turning up the loose soil at the bottom of rivers in expectation of finding food for itself, small fish are seen, (according to Mr. Yarrell's observation,) attending it to pick up minute animalculæ in the removed earth.

The barbel varies from two to three feet in length, and from fifteen to eighteen pounds in weight. It spawns in May or June, and is very prolific. Barbel angling is a favourite spot with many, especially in the Thames and in the Lea; but as an article of food this fish is not esteemed: the roe is generally admitted to be poisonous, and cases are recorded where the flesh has produced inconvenient and even dangerous results to those who have eaten it. Other writers say, that both the roe and the flesh may be safely eaten; but we would caution our readers against both. During the spawning season fish are in general unwholesome, and the barbel probably more so than other fish; so that, if eaten at all times of the year, it may have proved injurious at one time and harmless at another, and hence, may have arisen the great diversity of opinion respecting the edible qualities of the barbel.

* "The lateral line, where it exists, as in the more typical groups, deserves much attention: the scales of which it is formed are always of a peculiar construction,—being perforated in the middle for the free issue of that mucous substance which is so prevalent among fish, and which is secreted in certain glands beneath: these scales are generally of a different shape from those of the body; and they have been recently employed by our best ichthyologists as additional aids for discriminating species, which otherwise bear a close resemblance." SWAINSON.

We will conclude our notice of the barbel with an amusing anecdote, related by Sir John Hawkins:—

Fishing for barbel is, at best, but a dull recreation. They are a sullen fish, and bite but slowly. The angler drops in his bait; the bullet, at the bottom of the line, fixes it to one spot of the river. Tired with waiting for a bite, he generally lays down his rod, and, exercising the patience of a setting-dog, waits till he sees the top of his rod move; then begins a struggle between him and the fish, which he calls his sport; and that being over, he lands his prize, fresh baits his hook, and lays in for another.

Living, some years ago, in a village on the banks of the Thames, I was used, in the summer months, to be much in a boat on the river. It chanced that, at Shepperton, where I had been for a few days, I frequently passed an elderly gentleman in his boat, who appeared to be fishing, at different stations, for barbel. After a few salutations had passed between us, and we were become a little acquainted, I took occasion to inquire of him what diversion he had met with. "Sir," says he, "I have had but bad luck to-day, for I fish for barbel, and you know they are not to be caught like gudgeons." "It is very true," answered I, "but what you want in tale, I suppose you make up in weight." "Why, Sir," says he, "that is just as it happens: it is true I like the sport, and love to catch fish, but my great delight is in *going after them*. I'll tell you what, Sir," continued he, "I am a man in years, and have used the sea all my life [he had been an India captain], but I mean to go no more; and have bought that little house which you see there [pointing to it], for the sake of fishing. I get into this boat [which he was then mopping] on a Monday morning, and fish on till Saturday night, for barbel, as I told you, for that is my delight; and this I have done for a month together, and in all that while have not had one bite."

On the wild gorse
Look for the rose of Shiraz, ere ye seek
Knowledge or virtue from the ill-trained sons
Of blind indulgence, luxury, or pride.

MRS. WEST.

THE beginning, and progress, and end of human life resemble the origin, and growth, and decay of a plant. We both of us, at first, arose from one common parent,—the Earth; into which we shall be again resolved. If we are not blasted in the bud of life; or if, through the weakness of the frame and constitution, we are not bowed down again to the ground, still as we grow we are continually exposed to the storms and tempests that beat upon us, and break us down. Or should we be permitted to arrive at our full proportion of strength and height, and escape those diseases which impair our bloom, and those accidents which lie in wait to destroy us, yet in the course of Nature how soon do our organs decay, and the fountains of life dry up, our honours fall from our heads, and we languish, fade, and die!—DR. JOHN TOTTIE.

THE BIBLE.—In every generation, and wherever the light of revelation has shone, men of all ranks, conditions, and states of mind, have found in this volume a correspondent for every movement toward the better felt in their own hearts. The needy soul has found supply, the feeble a help, the sorrowful a comfort; yea, be the recipiency the least that can consist with mortal life, there is an answering grace ready to enter. The Bible has been found a spiritual world,—spiritual, and yet at the same time outward and common to all. You in one place, I in another, all men somewhere or at some time, meet with an assurance that the hopes and fears, the thoughts and yearnings that proceed from, or tend to, a right spirit in us, are not dreams or fleeting singularities, no voices heard in sleep, or spectres, which the eye suffers, but not perceives. As if on some dark night a pilgrim, suddenly beholding a bright star moving before him, should stop in fear and perplexity. But lo! traveller after traveller passes by him, and each, being questioned whither he is going, makes answer, "I am following yon guiding star!" The pilgrim quickens his own steps, and presses onward in confidence. More confident still will he be, if, by the way-side, he should find, here and there, ancient monuments, each with its votive lamp, and on each the name of some former pilgrim, and a record that there he had seen or begun to follow the benignant star!—COLERIDGE.

OPTICAL ILLUSIONS. V.

In our last paper on this subject, we brought before the reader the results of a series of experiments by Dr. Roget, and the very clear explanation which he gives of the causes of an apparent curvature in the spokes of a moving wheel, when seen through a series of parallel apertures. On the present occasion, we will direct our attention to various experiments performed by Professor Faraday as described a few years ago in a scientific journal.

Dr. Faraday notices several instances of phenomena bearing considerable resemblance to those described by Dr. Roget. Happening to be present in a large manufactory, he saw two cog-wheels which were moving with such velocity, that if the eye were retained immoveable, no distinct appearance of the cogs in either could be observed; but upon standing in such a position that one wheel appeared behind the other, the distinct though shadowy resemblance of cogs moving slowly in one direction was immediately seen. He also adduces an instance of a somewhat similar kind, as having been witnessed by Mr. Brunel at the Thames Tunnel. Two small wheels being connected together, an endless rope which passed over and was carried by one of them, immediately returned and passed in the opposite direction over the other, and consequently moved the two wheels in opposite directions with great but equal velocities. When viewed from a particular position, they presented the appearance of a wheel with immoveable radii.

Dr. Faraday, with that manipulative ingenuity which so distinguishes him in matters of science, devised means for illustrating many phenomena of this kind on a small scale. For instance, he suggests a mode of illustrating the phenomenon of the coach wheel, described by Dr. Roget. His plan is, to make a small wheel of pasteboard revolve before a black or dark-coloured ground; and whilst regarding the wheel fixedly, to traverse the space before it with a little barred grating also cut out of pasteboard, By altering the position of the grating and the direction of its motion, it will be seen that the straight lines in the wheel are always parallel to the bars of the grating, and that the convexity of the curved lines is always towards that side of the grating where its motion coincides in direction with the motion of the radii of the wheel. By varying the velocity of the wheel and the position of the grating, the curves present great variety of appearance.

A double wheel often presents a singular appearance. When the two wheels of a gig or carriage in motion are looked at from an oblique position, so that the line of sight crosses the axle, the space through which the wheels overlap appears to be divided into a number of fixed curved lines, passing from the axle of one wheel to the axle of the other. This is shown in an exceedingly pretty manner by the following arrangement, proposed by Dr. Faraday. Cut two equal wheels out of white cardboard, having an equal number of radii, from twelve to twenty or thirty, as in the annexed cut, fig. 1. Insert a large needle through their centres, so as to act as an axle for both, keeping them two or three inches apart. Revolve them between the fingers, and look at them in an oblique direction against a dark or black ground. The radii will then appear to have lost their individual existence, but will present the very curious appearance represented in fig. 2.

When a dark-coloured wheel of a carriage is moving on a light-coloured road, so that the sun shines almost directly on its broadside, and the wheel and its shadow are looked at obliquely, so that the one partly overlaps the other, then, in the overlapping part, luminous or light lines will be perceived curved more or less, and conjoining the axle and its shadow, if the wheel and shadow are superposed sufficiently; or, tending to do so, if they are superposed only in part: the appearance being the more perfect as the motion is more rapid. The mode suggested for imitating this effect, is to make a pasteboard wheel, similar to that described in the last paragraph, to blacken it, to stick it on a pin, and to revolve it in sunshine or in candle-light before a sheet of white paper. An effect similar to that of fig. 3 may be thus produced.

Dr. Faraday contrived a very pretty machine, by which, with slight adjustments, a large variety of effects might be produced, more or less analogous to those which have engaged our attention. As some of our readers might possibly feel inclined to construct such an apparatus for themselves, we will give a representation of it, together with a description of the mode in which it was constructed.

A board was fixed upright upon the middle of another board, serving as a base. The upright board, represented by the framework of fig. 4, was cut so as to leave three vertical stems, one in the middle and two at the ends, forming points of support, which were supplied with little caps made of sheet copper, and bent into the shape of fig. 5. These copper caps, when in their places, furnish four bearings for the support of two axes, one on each side the middle. The axes are small pieces of steel wire tapered at the extremities; each has upon it a little roller or disk of soft wood, which, though it can be moved by force from one part of the axis to another, has still friction sufficient to carry the latter with it when turned round. These axes are made to revolve in the following manner. A circular copper plate about four inches in diameter has three pulleys of different diameter fixed upon its upper surface, whilst its lower surface is covered with a piece of sand-paper attached by cement. A hole is made through the centre of the plate and pulleys, and guarded by a brass tube, so fitted as to move steadily but freely upon an upright steel pin fixed in the middle of the centre wooden support; when the plate is in its place, it rests upon the two middle rollers belonging to the horizontal axes, whilst it is rendered steady by the up right pin. The plate can easily be turned round in a hori zontal plane; and it then causes the two axes with their rollers, through the friction occasioned by the sand-paper, to revolve in opposite directions; and the velocities of these can be made either equal to each other, or to differ in almost any desired ratio, by shifting the rollers upon the horizontal axes nearer to or farther from the centre of the stand.

To produce motions of the axis in the *same* direction, an aperture was cut in the lower part of the upright board; a roller, turned for it, loosely fitted within the aperture; and a steel pin or rod passed as an axis through the roller. The roller hangs in its place by endless lines, made of thread, passing under it, and over little pulleys fixed on the horizontal axes; when, therefore, it is turned by the projecting pin, it causes the revolution of the axes. A variation in the velocities may be obtained by having the roller of different diameters in different parts, and by having pulleys of different dimensions.

This apparatus had to carry wheels either with cogs or spokes, according to the nature of the experiment about to be tried, and the arrangement of the wheels was as follows. The wheels were cut out of cardboard, with a diameter of about seven inches, and were formed with cogs or spokes at pleasure. A piece of cork, such as the end of a phial cork, about the tenth of an inch in thickness, was then fastened by a little soft cement to the middle of the wheel, and a perforation was made through the centre both of the cork and of the cardboard. The wheels could then at any time be put upon the axes, and, being held sufficiently firm by the friction of the cork, turned with them. By these arrangements the axes could be changed, or the wheels shifted, or the velocities altered, with very little trouble.

With such an apparatus as this Dr. Faraday made many curious experiments, all depending, in some degree

Fig. 1

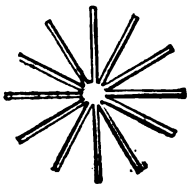


Fig. 2.

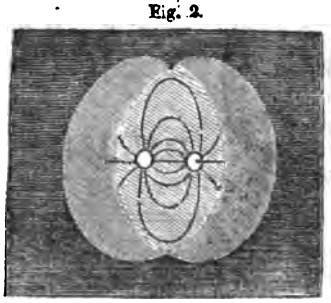


Fig. 3.

Fig. 4.

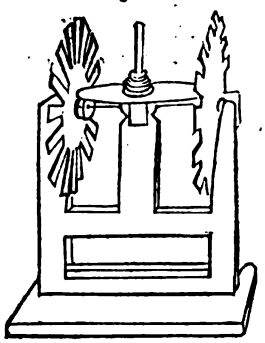


Fig. 5.

or other, on the principles before explained. Two equal cardboard wheels, with sixteen cogs each, were mounted in such a way as to have equal velocities, but in opposite directions. When put into motion, which was easily done by the thumb and finger, applied to the upper pulley of the horizontal copper plate, they presented each the appearance of an uniform tint at the part corresponding to the series of cogs or teeth, provided the eye was so placed as to see the whole of both wheels; but when such a position was chosen for the eye, that the wheels appeared to be superposed, then in place of an uniform tint, the appearance of teeth or cogs was seen,—misty, but perfectly stationary, whatever the degree of velocity given to the wheel. By cutting the cogs or teeth in the wheel nearest to the eye (the left one in the cut), deeper, the eye could be brought nearly into the prolongation of the axes of the wheels, and the phenomenon be seen in great completeness. The number of spectral teeth, if the term may be employed, presented to the eye under these circumstances, was exactly double the number of teeth in either wheel; thus a wheel with twelve teeth produced twenty-four black and twenty-four white alternations, giving the appearance of twenty-four teeth, with an equal number of intervening spaces. When one wheel was made to move a little faster than the other, by shifting the wooden roller on its axis, then the spectrum travelled in the direction of that wheel which had the greater velocity; and the greater the difference between the velocities of the two wheels, the faster did the spectral wheel appear to move. When the wheels were observed in such a direction that they only partially visually superposed each other, the effect took place only in those parts.

In another experiment wheels were fixed on the machine, consisting of radii or spokes, twelve in number, equal in length and width. When revolved alone, each wheel gave, with a certain velocity, a perfectly uniform tint, but when visually superposed there appeared a fixed wheel, having twenty-four spokes, equal in dimensions to the original spokes. Variations of the positions of the eye, or of the relative velocity of the two wheels, caused corresponding differences to occur in the spectral wheel.

In observing these effects Dr. Faraday states that either the wheels should be black or in shade, whilst the part beyond is illuminated, or else that the wheels should be white and enlightened, whilst the part beyond is in deep shade. The cog-wheels present nearly the same appearance in both cases, though in reality the parts of the spectrum which appear darkest by the one method are lightest by the other. The spoke wheels give a spectrum having white radii in the first method, and dark radii in the second. Placing the wheels between the eye and the clouds, on a white wall, or a lunar lamp, answers well for the first method, and for the second, merely reversing the position, and allowing the light to shine on the parts of the wheel towards the eye, whilst the back-ground is black.

In our next paper we shall describe other experiments relating to this singular subject, made by Dr. Faraday, and shall also state the mode in which that philosopher, acquiescing in the opinion of Dr. Roget, explains and accounts for the production of these phenomena.

WHAT a fine moral does Milton inculcate throughout his *Paradise Lost*, by showing that all the weakness and pain of the rebel angels was the natural consequence of their sinning. And it may in general be observed of Milton, that he is scarcely ever so far hurried on by the fire of his muse, as to forget the main end of all good writing, the recommendation of virtue and religion.—THYER.

"IT has always appeared to me," says Dr. Johnson, "as one of the most striking passages in the visions of Quevedo, that which stigmatises those as fools who complain that they failed of happiness by sudden death. Quevedo asks, How can death be sudden to a being who always knew that he must die, and that the time of his death was uncertain?"

THE names of Horeb and Sinai are used interchangeably in the Pentateuch, to denote the mountain on which the Law was given; and this circumstance has naturally occasioned difficulty to commentators. The most obvious and common explanation is, to regard one (Sinai) as the general name for the whole cluster, and the other (Horeb) as designating a particular mountain; much as the same names are employed by the Christians at the present day. So, too, the Arabs now apply the name Jebel-et-Tûr to the whole central granite region; while the different mountains of which it is composed are called Jebel Kâtherîn, Jebel Mûsa, &c. On looking at the subjects during our sojourn at the convent, I was led to a similar conclusion; applying the names however differently, and regarding Horeb as the general name and Sinai as the particular one. Two circumstances seem to favour this conclusion. One is, that before and during the march of the Israelites from Egypt to the place where the Law was given, the latter is called only Horeb; just as the Arabs now speak of going from Cairo to Jebel-et-Tûr; while during the sojourn of the Hebrews before the mountain, it is spoken of (with one exception) only as Sinai; and after their departure, it is again referred to exclusively as Horeb. The other and main fact is, that while the Israelites were encamped at Rephidim, Moses was commanded to go on with the elders before the people, and smite the rock in Horeb, in order to obtain water for the camp. The necessary inference is, that some part of Horeb was near to Rephidim; while Sinai was yet a day's march distant.—ROBINSON'S *Palestine*.

THOU Uncreate, Unseen, and Undefined,
Source of all life, and Fountain of the mind,
Pervading Spirit! whom no eye can trace;
Felt through all time, and working in all space,
Imagination cannot paint that spot,
Around, above, beneath, where Thou art not!

R. MONTGOMERY.

LONDON:

JOHN WILLIAM PARKER, WEST STRAND.

PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.

Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 590. SEPTEMBER 11TH, 1841. {PRICE ONE PENNY.

THE BANKS OF THE THAMES. VII.

HAMPTON BRIDGE.

If the reader have an opportunity of looking at a map of the course of the Thames, he will find that the point at which the river Wey enters the Thames is the most southern during its whole course. It is at that point that we resume our tour, between Chertsey and Oatlands.

Between Chertsey Bridge and the Wey, on the Surrey side of the river, is Woburn Park, a beautiful seat, the grounds of which were laid out as a *ferme ornée* by Mr. Southcote, whose talents in that species of gardening were thus apostrophised by Mason in his *English Garden*:—

> On thee too, Southcote, shall the Muse bestow
> No vulgar praise, for thou to humblest things
> Could'st bring ennobling beauties: decked by thee,
> The simple farm eclipsed the garden's pride,
> E'en as the virgin blush of innocence
> The mimicry of art.

Adjoining these grounds is Ham Farm, or Park, through which the river Wey finds its course to the Thames. This tributary, rising on the borders of Surrey, south-west of Haslemere, first takes its course by Liphook, in Hampshire: again entering Surrey it runs eastward to Godalming and Guildford, having been joined at Shalford by a stream which rises in the commons to the south of Wotton, and which, though small, supplies a great number of mills, besides embellishing many pleasure-grounds in its course. From Guildford the Wey passes north-eastward to Woking, leaves the town at a small distance on the north-west, then proceeds to Weybridge, to which place it gives name, and there discharges itself into the Thames.

Eastward of Weybridge, and following the curvature of the river for some distance, is the manor of Oatlands, once belonging to the late Duke of York, and remarkable for the many hands into which it has passed. Before the time of Henry the Eighth it belonged to the family of Rede, one of the members of which exchanged it with the monarch for the manor of Tanbridge, in the same county. While royal property it was at intervals the residence of some branches of the royal family. Queen Elizabeth occasionally visited it; Ann, consort of James the First, here built a room called the silk-worm room. Charles the Second settled this manor on his mother, Henrietta Maria, for her life. The mansion had been much injured during the civil wars, and after the death of the queen, Charles granted a lease of it to the Earl of St. Albans. It next passed into the possession of Lord Chief-Justice Herbert, upon whose attainder it was granted to the Earl of Torrington. The next possessor and occupant was the Duke of Newcastle, from the descendant of whom the Duke of York purchased Oatlands.

We must now cross the Thames, and view the little village of Shepperton, the retreat of many an adherent of Izaak Walton. The quiet and serene beauties of the neighbourhood are well calculated for the mind of such a man as "honest Izaak," who learned the art of angling on the banks of the Thames, and whose *Angler's Wish*

points out the spots, the employments, and the associations which delighted him.

I in these flowery meads would be:
These crystal streams should solace me,
To whose harmonious bubbling noise
I with my angle would rejoice.
Or, on that bank, feel the west wind
Breathe health and plenty, please my mind,
To see sweet dew-drops kiss these flowers,
And then washed off by April showers:
Here hear my Kenna sing a song;
There see a blackbird feed her young,
Or a laverock build her nest:
Here give my weary spirits rest,
And raise my low-pitched thoughts above
Earth, or what poor mortals love:
Thus free from law-suits, and the noise
Of princes' courts, I would rejoice,
Or with my Bryan and a book
Loiter long days near Shawford brook;
There sit by him and eat my meat,
There see the sun both rise and set;
There bid good morning to next day,
There meditate my time away
And angle on, and beg to have
A quiet passage to a welcome grave.

While speaking of this prince of anglers, we may remark that the Thames, near the spot at which we have now arrived, abounds with almost every different species of fish that is to be found in other British rivers, such as perch, eels, roach, dace, bleak, barbel. The roach, it is said, are never seen below London bridge; the others are found as low as the water continues fresh. Flounders are seldom found above Fulham, whither they are conveyed by the tide. The salmon appears in the river about the middle of February, its capture being prohibited during certain of the autumnal and winter months. The shad, like the salmon, is a fish of passage: it appears about the beginning of June, the usual weight being from four to five pounds.

Again we cross to the Surrey side of the river, and pay a passing visit to the town of Walton. It has been stated, but on what grounds we do not know, that Walton was formerly in the county of Middlesex, but that, three or four hundred years ago, the old channel of the Thames was changed by an inundation, by which also a church was destroyed. At about a furlong above the bridge, at Walton, is a place called Cowey Stakes, where, according to some authorities, Cæsar passed the Thames. Stout stakes, driven into the bed of the river at this place, have been a source of much conjecture and discussion. Bede stated that the Britons had stationed themselves on the other side of the river, and had fenced the bank with sharp stakes, securely driven into the ground: these stakes he describes as being as thick as a man's thigh, and as being soldered or pointed with lead at the bottom, as if to make them penetrate more easily into the ground. It has, however, been justly observed by others that the object of driving these stakes could hardly have been the prevention of Cæsar's attempt to cross the river, since the stakes range directly across from bank to bank. Others have supposed that they are merely remains of a fishing-weir. Mr. Bray, the historian of Surrey, was informed by a fisherman, who had lived at Walton, and known the river all his life, that at this place he had taken up several stakes, of the thickness of his thigh, about six feet long, shod with iron, the wood very black, and so hard as to turn the edge of an axe. Mr. Speaker Onslow had a set of knife and fork handles made from them, which, when worked, were as black, hard, and heavy, as ebony. Whatever might have been the purpose for which these stakes were driven into the river, the remains of Roman camps in the neighbourhood seem to afford some support to the opinion that this was the spot at which Cæsar crossed the river.

Near Walton are the beautiful grounds of Paine's Hill, long celebrated for the skill with which they were laid out by their proprietor, the Hon. Charles Hamilton. A considerable part of these grounds on the north side was taken from the barren heath; the south side was a bank above the river Mole, which runs at the foot of it. Availing himself of the inequalities of the land, he made his plantations and placed his buildings with the utmost judgment, and formed a spacious piece of water, which, though considerably above the bed of the river, is supplied from it by a simple but ingenious contrivance. Horace Walpole, in his *Observations on Gardening*, speaks with much commendation of these grounds. He distinguishes—

Three kinds of gardens,—the garden which connects itself with the park, the ornamental farm, and the forest or savage garden, by which I mean that kind of Alpine scenery, composed almost wholly of pines and firs, a few birch, and such trees as assimilate with a savage and mountainous country. Mr. Charles Hamilton, at Paine's Hill, has in my opinion given a perfect example of this mode in the utmost boundary of his garden. All is great and foreign and rude, the walks seem not designed, but cut through the wood of pines, and the style of the whole is so grand, and conducted with so serious an air of wild and uncultivated extent, that when you look down on this seeming forest, you are amazed to find only a few acres.

The church at Walton contains the tombs of several persons of some notoriety, among whom is William Lilly, the Astrologer. In the chancel are preserved several brass plates, which serve to record a very singular feat of activity. They appear to have been once laid over a grave stone. On one of these plates, John Selwyn, his wife, and eleven children, are represented in a praying posture: on another plate he is seen seated on the back of a stag, holding by one of the animal's horns with his left hand, and plunging a sword into its neck with his right. It appears, from a black-letter inscription, that this John Selwyn was under-keeper of the park at Oatlands, in the reign of Queen Elisabeth: the bugle-horn, the badge of his office, is apparent on the plates. This man, according to a tradition which seems to be supported by the testimony of the monument, was extremely famous from his strength, agility, and skill in horsemanship, specimens of all of which he exhibited before the queen, at a grand stag-hunt in that park. While attending at the hunt, as was the duty of his office, he, in the heat of the chase, suddenly leaped from his horse, upon the back of the stag, both running at the same time with the utmost speed, and not only kept his seat gracefully, in spite of every effort of the affrighted beast, but, drawing his sword, guided him with it towards the queen, and when near to her, plunged it into his throat, so that the stag fell dead at her feet.

Proceeding down the river from Walton, the view on either side is bounded by the osiers with which its banks are thickly covered, till the elegant village of Sunbury appears, presenting a long range of fine domestic structures, among which Sunbury Place, at its eastern extremity, is seen to great advantage from the river. This mansion, some years ago the residence of the Hon. Percy Wyndham, has four fronts, with a pavilion at each corner. The grounds are extensive, and the pleasure-lawn and plantations disposed with considerable taste and judgment. The ornamental dwellings of this handsome village are not confined to the margin of the river. The road leading northward to the common is bordered by many detached villas, with good continuous pleasure-grounds, and such likewise occur in other parts of the parish. Kempton Park contains an extensive mansion, built, in imitation of the Gothic style, by the late Mr. Hill, proprietor of the gunpowder mills on Hounslow Heath. On this domain stood a palace of our early kings, of the existence of which no tradition remains, though an inquisition, taken by order of Edward the Third, in 1331, and preserved among the records of

the Tower, describes it as having fallen into a dangerous state of dilapidation, and it was probably demolished at that time to save the expense of repairs.

The tourist next reaches Hampton Bridge, with the village of Hampton adjoining. In the reign of Edward the Confessor, Hampton belonged to Earl Algar, a powerful Saxon nobleman, and after the Norman Conquest it was held by Walter de St. Valeri, who probably gave the advowson of the living to the priory of Takely, in Essex, which was a cell to the abbey of St. Valeri, in Picardy, but the manor subsequently became the property of Sir Robert Gray, whose widow, in 1211, left it to the Knights Hospitallers, and they at one period had an establishment here for the sisters of that order. Three centuries afterwards it passed into the hands of the Crown, under circumstances which we shall detail when describing Hampton Court Palace.

The village of Hampton stands about one mile and a half from the palace, on the north side of the Thames. It contains several handsome villas, particularly one which belonged to the celebrated Garrick, on the lawn in front of which is a small temple dedicated to Shakspere. Hampton Court Bridge, which is of wood, has a light and pleasing effect. There is also a ferry over the river at the village of Hampton, for carriages and foot-passengers.

By far the most attractive object at or near Hampton is Hampton Court Palace, a description of which we must defer to our next paper.

THE PATAGONIANS.

Captain King, of H.M.S. *Adventure*, was engaged, with the expedition under his direction, for several years in surveying the southern shores of South America. The *Adventure* and the *Beagle* entered the Strait of Magalhaens (commonly called Magellan,) in the latter end of December, 1826. This was, of course, the summer season of these regions. Captain King thus describes his first interview with the Patagonians.

In the evening an Indian was observed on horseback riding to and fro upon the beach, but the weather prevented my sending a boat until the next morning, when Lieut. Cooke went on shore to communicate with him and other Indians who appeared, soon after dawn, upon the beach. On landing, he was received without the least distrust. They were eight or ten in number, consisting of an old man and his wife, three young men, and the rest children, all mounted on good horses. The woman, who appeared to be about fifty years of age, was seated astride upon a pile of skins, hung round with joints of fresh guanaco meat* and dried horseflesh. They were all wrapped in mantles, made chiefly of the skins of guanacoes. These mantles were large enough to cover the whole body. Some were made of skins of the zorillo, or skunk, an animal like the pole-cat, but ten times more offensive; and others, of skins of the puma.

The tallest of the Indians, excepting the old man, who did not dismount, was rather less than six feet in height. All were robust in appearance, and with respect to the head, length of body, and breadth of shoulders, of gigantic size; therefore, when on horseback, or seated in a boat, they appeared to be tall, as well as large men. In proportion to the parts above-mentioned, their extremities were very small and short, so that when standing they seemed but of moderate size, and their want of proportion was concealed by the mantle, which enveloped the body entirely, the head and feet being the only parts exposed.

When Mr. Cooke landed, he presented some medals (provided for the purpose of giving away to the Indians,) to the oldest man, and the woman: and suspended them round their necks. A friendly feeling being established, the natives dismounted, and even permitted our men to ride their horses, without evincing the least displeasure at the free advantage taken of their good nature.

Mr. Cooke returned to the ship with three natives, whom he had induced to go with us to Elizabeth Island; the others were to meet them and provide us with guanaco meat, to which arrangement the elders of the family had, after much persuasion, assented. At first they objected to their companions embarking with us, unless we left hostages for their safety; but as this was refused they did not press the point, and the three young men embarked. They went on board singing, in high glee.

While the ship was getting under way, I went ashore to a large number of Indians, who were waiting on the beach. When my boat landed they were mounted and collected in one place. I was surprised to hear the woman accost me in Spanish; of which, however, she knew but a few words. Having presented medals to each of the party, they dismounted (excepting the elders), and in a few minutes became quite familiar. By this time Capt. Stokes had landed, with several of his officers, who increased our party to nearly double the number of theirs; notwithstanding which they evinced neither fear or uneasiness. The woman, whose name was Maria, wished to be very communicative; she told me that the man was her husband, and that she had five children. One of the young men, whom we afterwards found to be a son of Maria, who was a principal person of the tribe, was mounted upon a very fine horse, well groomed, and equipped with a bridle and saddle that would have done credit to a respectable horseman of Buenos Ayres or Monte Video. The young man wore heavy brass spurs, like those of the Guacos of Buenos Ayres. The juvenile and feminine appearance of this youth made us think he was Maria's daughter, nor was it until a subsequent visit that our mistake was discovered. The absence of whiskers and beard gives all the younger men a very effeminate look, and many cannot be distinguished in appearance from the women, but by the mode in which they wrap their mantles around them, and by their hair, which is turned up and confined by a fillet of worsted yarn. The women cross their mantle over the breast like a shawl, and fasten it together with two iron pins or skewers, round which are twisted strings of beads and other ornaments. They also wear their hair divided, and gathered into long tresses or tails, which hang one before each ear; and those who have short hair, wear false tails made of horse-hair. Under their mantle the women wear a sort of petticoat, and the men a triangular piece of hide instead of breeches. Both sexes sit astride, but the women upon a heap of skins and mantles when riding. Both sexes wear boots made of the skins of horses' hind legs, of which the parts about the hock-joints serve for the heels.

The only weapons which we observed with these people were the bolas, or balls, precisely similar to those used by the Pampas Indians; but they are fitter for hunting than for offence or defence. Some are furnished with three balls, but, in general, there are only two. These balls are made of small bags or purses of hide, moistened, filled with iron pyrites, or some other heavy substance, and then dried. They are about the size of a hen's egg, and attached to the extremities of a thong, three or four yards in length. To use them, one ball is held in the hand, and the other swung several times round the head until both are thrown at the object, which they rarely miss. They wind round it violently, and, if it be an animal, throw it down. The bolas, with three balls, similarly connected together, are thrown in the same manner.

As more time could not be spared, we went on board.—The wind having been very strong and against the tide, the ship had much motion, which made our Patagonian passengers very sick. The next day, the wind proved contrary, and the Patagonians showed much uneasiness at being kept on board so much longer than they expected; but, as they seemed to understand the cause of their detention, and as their sickness ceased when we reached smooth water, they gradually recovered their good humour, and became very communicative. As well as we could understand their pronunciation, their names were Coigh, Coichi, and Aighen. The Indians of Tierra del Fuego, with whom they are not on friendly terms, are designated by them Sapallios. This name was applied to them in a contemptuous manner.

Aighen's features were remarkably different from those of his companions. Instead of a flat nose, his was aquiline and prominent, and his countenance was full of expression. He proved to be good-tempered and easily pleased; and whenever a shade of melancholy began to appear, our assurance of landing him on the morrow, restored his good humour, which was shown by singing and laughing.

Coichi's head was long and flat, at the top; the forehead

* The flesh of the guanaco, or llama; which may be termed the camel of South America.

broad and high, but covered with hair within an inch and a half of the eyebrow, which had scarcely any hair. The eyes were small, the nose was short, the mouth wide, and the lips thick. Neck short, and shoulders very broad. The arms were short, and wanting in muscle, as were also the thighs and legs. The body was long and large, and the breast broad and expanded; his height nearly six feet.

The next day we rounded Elizabeth Island, and reached Cape Negro, where we landed the Indians, after making them several useful presents, and sending some trifles by Aighen to Maria, who, with her tribe, had lighted large fires about the country behind Peckett's Harbour, to invite us to land. Our passengers frequently pointed to them, telling us that they were made by Maria, who had brought plenty of guanaco meat for us.

In the following May the *Adventure* was again in the same neighbourhood.

After the gale had abated, we proceeded with fair weather and a light breeze to the Second Narrow, when the wind fell; but the tide being in our favour we passed rapidly through. On a hill near us we observed three or four Patagonian Indians standing together, and their horses feeding close to them. A fire was soon kindled, to attract our notice, to which signal we replied by showing our colours; and had we not already communicated with these people, we should certainly have thought them giants, for they "loomed very large" as they stood on the summit of the hill. This optical deception must doubtless have been caused by mirage: the haze has always been observed to be very great during fine weather and a hot day, arising from rapid evaporation of the moisture so abundantly deposited on the surface of the ground, in all parts of the Strait.

As soon as the Patagonians found they were noticed, they mounted, and rode along the shore abreast of us, being joined by other parties, until the whole number could not have been less than forty. Several foals and dogs were with them. Having anchored in Gregory Bay, where I intended remaining for two days to communicate with them, I sent up a rocket, burnt a blue light, and dispatched Lieutenant Cooke on shore to ask for a large supply of guanaco meat, for which we would pay in knives and beads. The boat returned on board immediately, bringing four natives, three men, and Maria. This rather remarkable woman must have been, judging by her appearance, about forty years old; she is said to have been born at Assuncion, in Paraguay, but I think the place of her birth was nearer Buenos Ayres. She spoke broken, but intelligible, Spanish, and stated herself to be sister of Bysante, the cacique of a tribe near the Santa Cruz River, who is an important personage, on account of his size (which Maria described to be immense,) and his riches. In speaking of him, she said he was *very* rich; he had many mantles, and also many hides ("*muy* rico, tiene muchas mantas y tambien muchos cueros.") One of Maria's companions, a brother of Bysante, was the tallest and largest man of this tribe; and though he only measured six feet in height, his body was large enough for a much taller man. He was in great affliction; his daughter had died only two days before our arrival; but, notwithstanding his sad story, which soon found him friends, it was not long before he became quite intoxicated, and began to sing and roar on the subject of his misfortunes, with a sound more like the bellowing of a bull than the voice of a human being. Upon applying to Maria, who was not quite so tipsy as her brother, to prevent him from making such hideous noises, she laughed and said, "Oh, never mind, he's drunk, poor fellow! his daughter is dead," (Es boracho, povrecito, murio su hija); and then, assuming a serious tone, she looked towards the sky, and muttered in her own language a sort of prayer or invocation to their chief demon, or ruling spirit, whom Pigafetta, the companion and historian of Magalhaens, called *Setebos*, which Admiral Burney supposes to have been the original of one of Shakspeare's names in the *Tempest*:—

> . . . . . His art is of such power,
> He could control my dam's god Setebos.

Maria's dress was similar to that of other females of the tribe; but she wore ear-rings, made of medals stamped with a figure of the Virgin Mary, which with the brass pin that secured her mantle across her breast, were given to her by one Lewis, who had passed by in an American sailing vessel, and who, we understood from her, had made them "Christians."

I accompanied Maria to the shore. On landing, she conducted me to the place where her family were seated round her property. They consisted of Manuel, her husband, and three children, the eldest being known by the appellation of Capitan Chico, or "Little Chief." A skin being spread out for me to sit on, the family and the greater part of the tribe collected around. Maria then presented me with several mantles and skins, for which I gave in return, a sword, remnants of red baize, knives, scissors, looking-glasses, and beads: of the latter I afterwards distributed bunches to all the children, a present which caused evident satisfaction to the mothers, many of whom also obtained a share. The receivers were selected by Maria, who directed me to the youngest children first, then to the elder ones, and lastly to the girls and women. It was curious and amusing to witness the order with which this scene was conducted, and the remarkable patience of the children, who, with the greatest anxiety to possess their trinkets, neither opened their lips, nor held out a hand, until she pointed to them in succession.

Having told Maria that I had more things to dispose of for guanaco meat, she dismissed the tribe from around me, and, saying she was going for meat, mounted her horse, and rode off at a brisk pace.

On her return, with a very small quantity of guanaco meat, her husband told her that I had been very inquisitive about a red baize bundle, which he told me contained "Cristo," upon which she said to me, "Quiere mirar mi Cristo?" (Do you wish to see my Christ?) and then, upon my nodding assent, called around her a number of the tribe, who immediately obeyed her summons. Many of the women, however, remained to take care of their valuables. A ceremony then took place. Maria, who by the lead she took in the proceedings, appeared to be high priestess as well as cacique of the tribe, began by pulverising some whitish earth in the hollow of her hand, and then taking a mouthful of water, spat from time to time upon it, until she had formed a pigment, which she distributed to the rest, reserving only sufficient to mark her face, eyelids, arms, and hair with the figure of the cross. The manner in which this was done was peculiar. After rubbing the paint in her left hand smooth with the palm of the right, she scored marks across the paint, and again others at right angles, leaving the impression of as many crosses, which she stamped upon different parts of her body, rubbing the paint and marking the crosses afresh, after every stamp was made.

The men, after having marked themselves in a similar manner (to do which some stripped to the waist, and covered all their body with impressions), proceeded to do the same to the boys, who were not permitted to perform this part of the ceremony themselves. Manuel, Maria's husband, who seemed to be her chief assistant on the occasion, then took from the folds of the sacred wrapper an awl, and with it pierced either the arms or ears of all the party, each of whom presented in turn, pinched up between the finger and thumb, that portion of flesh which was to be perforated. The object evidently was to lose blood, and those from whom the blood flowed freely showed marks of satisfaction, while some whose wounds bled but little underwent the operation a second time.

When Manuel had finished he gave the awl to Maria, who pierced his arm, and then, with great solemnity and care, muttering and talking to herself in Spanish, (not two words of which could I catch, although I knelt down close to her, and listened with the greatest attention,) she removed two or three wrappers, and exposed to our view a small figure, carved in wood, representing a dead person, stretched out. * * * * * Each family possesses its own household god, a small wooden image, about three inches in length, the rough imitation of a man's head and shoulders, which they consider as the representative of a superior being, attributing to it all the good or evil that happens to them.

A GENTLEMAN, who had recently become known to the bishop, asked me one day to let him look into a copy of the *Protestant Kempis*. He opened the volume at p. 269, and, pointing to a note at the foot of the page, he observed that "he knew a family, which had been led to study the works of Bishop Taylor, (whom previously they had known only by name,) by that single note of Bishop Jebb." His quotation made so deep an impression, that the family in question procured Taylor's works on the strength of it; and had since become intimately conversant with his writings. The anecdote is a proof of the service which may be rendered, in a line or two, where taste and judgment are directed to the promotion of good. This one quotation was, probably, more effective than the most laboured panegyric.—FORSTER'S *Life of Bishop Jebb.*

THE HAWK-MOTH.

The helpless crawling caterpillar trace
From the first period of his reptile race;
Clothed in dishonour, on the leafy spray
Unseen, he wears his silent hours away,
Till satiate grown of all that life supplies,
Self taught the voluntary martyr dies.
Deep under earth his darkling course he bends,
And to the tomb a willing guest descends:
There long secluded in his lonely cell
Forgets the sun, and bids the world farewell:
O'er the wide waste the wintry tempests reign.'
And driving snows usurp the frozen plain:
In vain the tempests beat, the whirlwind blows,
No storms can violate his grave's repose.
But, when revolving months have won their way,
When smile the woods, and when the zephyrs play,
When laughs the vivid world in Summer's bloom,
He bursts and flies triumphant from the tomb;
And while his new-born beauties he displays,
With conscious joy his altered form surveys;
Mark while he moves amid the sunny beam,
O'er his soft wings the varying lustre gleam;
Launched into air on purple plumes he soars,
Gay natures face with wanton glance explores,
Proud of his various beauties wings his way,
And spoils the fairest flowers, himself more fair than they!
And deems weak man the future promise vain,
When worms can die, and glorious rise again?

Sphinx Nerion

THE Sphinxes, or Hawk-moths, belong to a very interesting family of lepidopterous* insects; which family has been named Crepuscularia, from the circumstance that many of the species are observed chiefly during the morning and evening twilight. These insects are distinguished by the antennæ, which are prismatic or fusiform, and usually thickest in the middle. Their colours are in general agreeably varied, the under wings being often banded. They fly with great strength and celerity, owing to the extent and firm consistence of their wings, the powerful muscles by which they are moved, and the bird-like manner in which their taper bodies are poised. During flight they produce a strong humming noise, occasioned by the rapid vibration of these wings, which renders their approach easily perceptible. Instead of settling upon flowers, like bees and other insects, they are frequently observed merely to hover over or before them, and to extend their long tubular trunks towards the nectaries. This peculiar hovering motion has obtained for them the appellation of *Hawk-moths*. The motions of one of these insects is beautifully described by Miss Mitford, who, in noticing her garden, traces "the gay gambols of the common butterflies, as they sport around the dahlias, or watches that rarer moth, which the country-people, fertile in pretty names, call the bee-bird; that bird-like insect which flutters in the hottest days over the sweetest flowers, inserting its long proboscis into the small tubes of the jasmine, and hovering over the scarlet flowers of the geranium, whose bright colour seems reflected on its own feathery breast; that insect which seems so thoroughly a creature of the air, never at rest, always when feeding self-poised and self-supported. and whose wings in their motion have a sound so deep, so full, so lulling, and so musical; nothing so pleasant as to sit amid that mixture of the flower and the leaf, watching the bee-bird."

The caterpillars of these moths vary greatly in their forms, especially in the fore-part of the body. In some this part is susceptible of great elongation, like the trunk of an elephant, whence those species are called elephant hawk-moths. This motion is effected when the insect is feeding or seeking food, at which time the neck assumes a narrow conical form, truncated in front, the head and face forming the truncated part; when in repose they withdraw this elongation. Other species elevate the fore-part of the body, while the rest of the body is applied flat to the surface on which it rests, which posture, resembling that of the Egyptian sphinx, has furnished a name to the insects. In some the skin is of so tough or flexible a texture, as to be capable of bearing great pressure without injury. Bonnet pressed the grub of the privet hawk-moth under water, till it was as flat and empty as the finger of a glove, yet within an hour it became plump and lively, as if nothing had happened. These caterpillars have also a horn on the eleventh ring, directed backwards, and a little curved. This, from its figure and direction, has been supposed an offensive or defensive weapon; but no one has observed the insect make use of it for such purposes. Besides, though called a horn, it is of a fleshy substance, and too soft to inflict any injury.

The caterpillars of the hawk-moths are smooth, and furnished with sixteen legs, the ten posterior being called pro-legs †; they are of cylindric form. They live solitarily, and feed on the leaves of vegetables. They are at first very active, and when disturbed, fall from the leaf upon which they were placed, suspending themselves by a thread; when more aged they become sluggish. They undergo the chrysalis state and make their cocoons in the earth, or upon its surface covered with leaves. The chrysalis state generally lasts seven or eight months.

One of the most elegant insects of this genus is the *Sphinx Ligustri*, or Privet hawk-moth. It is a large insect, measuring nearly four inches and a half from wing's end to wing's end; the upper wings are of a brown colour most elegantly varied or shaded with deeper and lighter streaks and patches; the under wings and body are of a fine rose colour, barred with transverse black stripes. The caterpillar, which is very large, is smooth, and of a fine green, with seven oblique purple and white stripes along each side; and furnished at the hinder part with the horn referred to above. This beautiful caterpillar is often found in the months of July and August feeding on the privet, the lilac, the poplar, and some other trees, and generally changes to a chrysalis in August or September, retiring for that purpose to a considerable depth beneath the surface of the ground, and after casting its skin, continuing during the whole winter in a dormant state, the sphinx emerging from it in the succeeding June.

Sphinx ocellata is perhaps still more beautiful: it is rather smaller than the preceding: the body is brown, as also the wings, which are finely clouded with different shades, while the lower wings are of a bright rose colour, each marked with a fine ocellated black spot, with a blue

* The insects of this order were named by Linnæus LEPIDOPTERA, or *winged with scales;* that is, the wings are covered with imbricated scales or feathers, presenting to the naked eye only the appearance of mere particles of dust or powder, but exhibiting under the microscope a regular series of scales or feathers, peculiar, as to shape or size, to each species.

† Those caterpillars which spin silk, often escape a fall or elude danger by means of the silken line which they produce. With this line they often drop through a space of several feet, and frequently disappoint a bird that has marked them out for a prey. When the danger is over, the caterpillar returns to its former situation by climbing its silken cable, for which purpose its fore-legs are furnished with a curved claw; while the pro-legs, as they are called, are well adapted for holding it firm to the branch when it has regained it, the pro-legs being constructed on the principle of forming a vacuum, like the leather sucker with which boys lift and drag stones. So difficult is it to remove a caterpillar from a branch without injury, that collectors usually cut off the branch and bear the insect away upon it.

interior circle, and a black centre. This insect proceeds from a green caterpillar of a rough or shagreen-like surface, marked on each side by seven oblique yellowish-white streaks, and furnished like the preceding with a horn at the tail. It is principally found on the willow; it retires underground in August or September to undergo its changes, and re-appears in the following June as a perfect insect.

The most remarkable of all European insects of this genus is the *Sphinx Atropos* of Linnæus. This is larger than the two former; the upper wings are of a fine dark grey, with slight markings of orange and white; the under wings are bright orange, marked by a pair of transverse black bands: the body is also orange-coloured, marked at the sides with black bars, while along the top of the back from the thorax to the tail runs a broad blue-grey stripe: on the top of the thorax is a very large patch, of a most singular appearance, exactly resembling the usual aspect of a skull, or death's head; it is of a pale grey, varied with dull ochre colour and black. This peculiar appearance has given to the insect the name of the Death's-head moth, a figure of which may be seen by referring to *Saturday Magazine*, Vol. I., p. 69, with some ingenious remarks thereon by the author of the *Journal of a Naturalist*.

When in the least disturbed or irritated, this insect emits a stridulous sound, something like the squeaking of a bat or mouse, and from this circumstance, as well as the symbol of mortality which is impressed upon it, it is held in much dread by uneducated persons in several parts of Europe, its appearance being regarded as a kind of ill omen, or harbinger of approaching fate. We are informed by the celebrated Reaumur, that the members of a female convent in France were thrown into great consternation by the appearance of one of these insects, which happened to fly in during the evening at the door of the dormitory. A number of these insects appeared some years ago in the province of Bretagne to the great terror of the peasants, who believed them to be the cause of certain epidemic maladies, which then prevailed in that country. In the Isle of France the natives believe that the dust cast from the wings of this insect in flying through an apartment, is productive of blindness to the visual organs on which it falls.

The caterpillar from which this curious sphinx proceeds, is in the highest degree beautiful, and far surpasses in size every other European insect of the kind. It sometimes measures nearly five inches in length, and is of considerable thickness: its colour is bright yellow; the sides are marked by a row of seven most elegant broad stripes or bands of a mixed violet and sky-blue colour; the tops of these bands meet on the back in so many angles, and are varied on that part with jet-black spots: it is furnished with the usual horny appendage on the last joint.

This caterpillar is principally found on the potato and the jasmine, these plants being its favourite food. It usually changes into a chrysalis at the latter end of the month of August, and the complete insect emerges in the following month: but some individuals have been observed to remain unchanged till the following summer.

S. hippophaes is an inhabitant of Dauphiny: the larva, either to avoid the glare of light, or the attacks of enemies, conceals itself during the day beneath the dead leaves at the roots of trees, and emerges only at night for the purpose of seeking food.

The sphinx affords a striking emblem of the change which we ourselves shall undergo, when our present life has terminated. When the first period of the insect's life has passed, it retires to the earth, and there remains buried during several months; it then rises to the surface, and bursting from the confinement of its tomb, commences a being of powers comparatively so exalted, and of beauty so superior, as not to be beheld without the highest admiration.

The plan of nature, in creating these sylph-like inhabitants of air is wonderful indeed. Who could ever pre-suppose that so lively, delicate, and brilliant an insect as a butterfly, so airy in its habits, and so fastidious in its food, should be derived from a crawling, voracious worm? The butterfly, on issuing from its cocoon, is entirely formed. Nothing of its prior state remains. Its figure, its habits, all, in a word, is so changed, that it can no longer be recognised. The butterfly is agility itself, and grace personified. It appears to disdain the earth, and in its magnificent robe to seek the skies, while it is sustained with nectar like the fabled divinities of old. Issuing from its dark cradle, it seems to rejoice in its new-born existence, to court the sunbeam, or delight in recognising the groves or fields where its laborious infancy had been passed. Its life is now a scene of perpetual enjoyment. It wanders from flower to flower, continually in pursuit of the pleasures of novelty and change.—GRIFFITH'S CUVIER.

IN March last, as I was repairing to the native village of Bustem, to survey a bridge which was thrown across the road, on my route from the station of Jellasore, on crossing the Soubunreeka river, my attention was attracted to a number of human skeletons, which lay scattered in various directions upon the white sands adjacent to the course of the stream. Upon inquiry I learned that these unfortunate relics were the remains of pilgrims who were on their road to the great pagoda of Juggernaut, and had been drowned two evenings before by means of a ferry-boat sinking with them during a violent north-wester. On my approaching several of these sad vestiges of mortality, I perceived that the flesh had been completely devoured from the bones by Pariah dogs, vultures, and other obscene animals. The only portion of the several corpses I noticed that remained entire and untouched were the bottoms of the feet and the insides of the hands, and this extraordinary circumstance immediately brought to mind that remarkable passage recorded in the Second Book of Kings, relating to the death and ultimate fate of Jezebel, who was, as to her body, eaten of dogs, and nothing remained of her but the "palms of her hands and the soles of her feet." The former narrative may afford us corroborative proof of the rooted antipathy that the dog has to prey upon the human hands and feet. Why such should be the case remains a mystery.—*From an Indian Correspondent of the Times.*

ON all sides, are we not driven to the conclusion that, of the things which man can do or make here below, by far the most momentous, wonderful, and worthy are the things that we call Books! Those poor bits of rag-paper, with black ink on them, from the daily newspaper to the sacred Hebrew BOOK, what have they not done! what are they not doing! For, indeed, whatever be the outward form of the thing, (bits of paper, as we say, and black ink) is it not verily, at bottom, the highest act of man's faculty that produces a book? It is the *Thought* of man,—the true thaumaturgic virtue, by which man works all things whatsoever. All that he does, and brings to pass, is the vesture of a Thought. This London City, with all its houses, palaces, steam-engines, cathedrals, and huge immeasurable traffic and tumult, what is it but a thought,—but millions of thoughts made into one,—a huge immeasurable spirit of a THOUGHT, embodied in brick, in iron, smoke, dust, palaces, parliaments, Hackney coaches, Katherine Docks, and the rest of it! Not a brick was made but some man had to *think* of the making of that brick. The thing we called "bits of paper with traces of black ink" is the *purest* embodiment a thought of man can have. No wonder it is, in all ways, the activest and noblest.—CARLYLE.

DURING the preceding year Tuweilib had spent a fortnight in and near the great plain el-Kâ'a, not far from Mount Serbâl, pasturing his camels, without a drop of water for himself or them. He drank the milk of the camels; and they, as well as sheep and goats, when they have fresh pasture, need no water. In such a case they will sometimes go for three or four months without it. Others had told us that the camel needs water once in every three days in summer, and every five days in winter, but this is probably when the pastures are dry, or when they are fed on provender.—ROBINSON'S *Palestine.*

MAPS AND MAPPING. I.

Progress of Map-Making.—Ancient Maps.—Maps of the Middle Ages.

O'er the map my finger taught to stray,
Cross many a region marks the winding way;
From sea to sea, from realm to realm I rove,
And grow a mere geographer by love.

Among the many concerns which engage the intellectual attention both of those who tarry at home and those who travel abroad, whether for business or pleasure, Maps are of essential importance. As the latter travel in reality, so the former may accompany them in imagination, and picture up the scenes which they describe. We propose, therefore, to furnish in this paper, for the general benefit of our readers, a concise detail of the *history* of maps, and, in two succeeding articles, a brief account of the principles on which they are usually constructed.

The word "Map" seems to have been derived from the Latin *mappa*, a table-napkin, which, in the public games of the Roman circus was hung out at the prætor's, or other great magistrate's seat, as a signal for the race, or other diversions, to begin. The mappa was received for this purpose by the *mapparius*, from the consul, prætor, or other great officer. Notice was anciently given by sound of trumpet, but Nero is said to have introduced the mappa, by throwing his napkin out of the window, to satisfy the people, who grew noisy at the delay of the sports while he was at dinner.

Without entering at present into a scientific definition of our subject, we may just state that maps have been ordinarily understood to be plane drawings, meant to represent the form, extent, position, and other particulars of the various countries of the earth. Such maps as have been intended to delineate more particularly the ocean, or any part of it, have commonly borne the name of "Charts."

It seems natural for man, even in the earliest stages of society, to endeavour to express, with more or less of proportion, the principal features of the countries in and about which he dwells. An intimation of this branch of the geographical art being in use among the Israelites is given at the beginning of the 18th chapter of the Book of Joshua: the *description* of the land of Canaan there spoken of was enjoined in the year 1444 B.C., and was made in order that the Jewish leader might apportion to the several tribes their respective inheritances. The Israelites must have derived their knowledge in this way from the Egyptians, as the Greeks drew their information from the Phœnicians, the great traders of antiquity, who, in the furtherance of their mercantile pursuits, had probably visited every spot of the then known earth.

The first person, however, who is spoken of as having constructed anything like a regular map of the world was Anaximander, the Milesian philosopher, who flourished in the sixth century before Christ. He also made Globes: he taught that the earth was of a cylindrical form; that men were born of earth and water mixed together, and heated by the beams of the sun; that the earth moved, and that the moon received light from the sun, which he considered as a circle of fire, like a wheel, about twenty-eight times bigger than the earth. He also made some of the earliest sun-dials.

Herodotus relates that certain Persians, commissioned by Darius the First, sailed from Sidon, in Phœnicia, to the coasts of Greece, which they examined, and transcribed, until they arrived as far as Tarentum, in Italy. They seem to have produced a sort of outline map: this took place about 500 B.C. Not long after, as we are told by the same writer, Aristagoras, visiting Cleomenes, king of Sparta, in order to solicit his assistance against the Persians, exhibited to the king a brazen plate or tablet, whereon the round earth was engraved, together with the sea and all the rivers. The object in view was of course to explain to the Lacedæmonians the situation of Persia,—the probable route of the invading army,—and the nature and object of the desired assistance.

Itinerary maps of the places of encampment were almost indispensable to the commanders of armies. Diognetus and Beton are mentioned by Pliny, as the surveyors of the marches of Alexander, who was very careful in examining the measures of his surveyors, and in obtaining his descriptions from the most skilful persons.

The progress of map-making was very considerably advanced by Eratosthenes, who flourished in the third century prior to the Christian era. He was keeper or president of the Library at Alexandria. He has been called a second Plato, the cosmographer and the geometer of the world. He is supposed to be the inventor of the armillary sphere. With the instruments with which the munificence of the Ptolemies, kings of Egypt, supplied the Library of Alexandria, he was enabled to measure the obliquity of the ecliptic, which he called $20\frac{1}{2}°$, it being in fact nearly $23\frac{1}{2}°$. He also measured a degree of the meridian, and determined the extent and circumference of the earth with great exactness, by means adopted by the moderns. He introduced into his map a regular parallel of latitude, which he accomplished by tracing a line over certain places whose longest day was observed to be of the same length. This parallel extended from the Straits of Gibraltar to the mountains of India, passing through the island of Rhodes, and, from its central position with respect to the principal ancient nations, it became a standard of reference in the maps of this period. Succeeding geographers made many attempts to determine the longitude of places by measurements of this line, but with no great success. He also drew a meridian from Meroë, in Western Ethiopia, through Syene, to Alexandria, in Lower Egypt. At this time a connexion was made to subsist between astronomy and geography, so that the advancement of the former tended to the improvement of the latter. Hence it was that Hipparchus, who flourished about 150 B.C. by fixing the construction of maps on something like a mathematical basis, enabled the geographer to lay down his latitudes and longitudes upon certain principles.

The celebrated geographer Strabo, who died A.D. 25, furnishes us with the state of geography in the age of Augustus Cæsar. But the extent of the earth's surface known to this writer does not much exceed that which was known four or five centuries earlier. His map of the world exhibits some remarkable errors. He supposed the Pyrenees to run north and south: he cuts off the projecting province of Brittany from France,—places Ireland, not to the west, but to the north of Britain,—and makes the Caspian communicate with the Northern Ocean, though Herodotus had accurately described it as a lake. A very good illustration of the geography of the ancients may be seen in the frontispiece to No. 379 of this work.

A sort of map, or road-book, called an *Itinerary*, was much in use among the Romans at about the commencement of the Christian era. It resulted from the necessity for furnishing the leaders of armies with information of their destined route; and though these itineraries, or surveys, were made with considerable care, there are no traces of mathematical geography in those which have been handed down to us, the chief object in view being clear directions for the march of their armies.

All the provinces of the Roman empire had been surveyed when Ptolemy composed his system of geography, in the middle of the second century of the Christian era. This production is valuable; because he has therein carried into full practice, and to greater perfection, the system of latitudes and longitudes, published by the celebrated Hipparchus, about three hundred years before.

As Ptolemy derived his information respecting the

distances of places chiefly from itinerary measurements, which usually exceeded the truth, it is not surprising that his map of the world should exhibit enormous errors, more especially in places beyond the ordinary range of the Roman empire. He represents, for instance, the northern coast of Africa nearly as a straight line! He places Carthage 313 English miles to the south of its true place, and Constantinople 276 miles too far to the north. He also makes the Mediterranean sea about 1000 English miles longer than it really is! Some of the most distinguished and best known places in Europe have been set down 500 or 600 miles too far apart:—and, strange to say, many such gross inaccuracies continued in the maps till the beginning of the eighteenth century! But we have already noticed this subject in our second article on Ancient NAVIGATION: Vol. XIII., p. 208.

It seems not improbable that the maps found in the MSS. of Ptolemy are really copies of, or derived from, original maps constructed by him, or under his care. So great an influence had this writer on the minds of most modern geographers until within 150 years ago, that many instances might be adduced, in which the authority of Ptolemy, who was but slightly acquainted with one half of the globe, was blindly submitted to in an age when Europeans wandered over its entire surface.

The itineraries of the Romans were of two kinds,—*Picta*, and the *Annotata*, the drawn and written: the latter contained the names of the stations and chief places from one another, without any detail: whereas, the former have all the graphic finish of a modern map. Of the former kind of itinerary, the most remarkable that remain to us, are the Itinerary of Antonine, the age of which it is difficult to ascertain; and the Itinerary of Jerusalem, a fragment which points out the whole route from Bordeaux to that city

Of the painted itineraries, a fine specimen is still preserved in the Imperial Library of Vienna; and it has been engraved and published under the name of the *Peutingerian Table*. It was probably originally made about the time of the Emperor Severus, or in the year 230 A.D. The copy which at present exists, is thought to be the work of a monk of the thirteenth century; it owes its name to Conrad Peutinger, a citizen of Augsburg, to whom it formerly belonged, and by whom it was illustrated in a learned commentary. The countries marked on this map are not placed in it according to their geographical position, their respective limits, and their real size; they are ranged arbitrarily, one after the other from west to east, without any regard to figure, or latitude and longitude. This table, or picture, is about twenty-two feet long, and one foot broad.

Some curious particulars have come down to us illustrative of the geographical ignorance of the MIDDLE AGES. The maps of these times may be generally classed, first,—into those in which the notions of the ancients were adhered to; and secondly,—those which exhibited new discoveries or countries popularly believed to exist. Many maps, of the *first* class are extant, in which the old world is represented as one great island; Africa terminating to the north of the equator. Among maps of the *second* class are those which seem to show some important discoveries in the west of Europe and of Africa in the twelfth and thirteenth centuries.

The geography of the Arabians is but imperfectly known. Their most eminent geographer, Al Edrissi, who lived about the middle of the twelfth century, divided the world into seven climates, from the equator northward; and each climate was again divided into eleven equal parts, from the western coast of Africa to to the eastern coast of Asia; the inconvenience of which arrangement is very obvious.

In the year 1383, two noble Venetians, named Zeni, having entered into the service of a prince of the Faroe Islands, which lie to the north of Scotland, drew up a map to illustrate the account of their navigations in these seas.

In some of the old British maps, which are rude in design and execution, Scotland is represented as an island separated from England by an arm of the sea. Ireland is also divided in two by the river Boyne, which is represented as a canal connecting the Irish Channel with the Atlantic. The towns are drawn in these maps of a disproportionate size; and the abbeys, with their walls, gates, and belfries, occupy so great a space, as to leave little room for the rivers, boundary-lines, or places of less seeming importance.

We have elsewhere noticed the famous silver map of Charlemagne*; but one of the most curious geographical monuments of those times is a map preserved in the Library of Turin, attached to a manuscript copy of the Apocalypse, which was written in the year A.D. 787. It represents the earth as a plane bounded by a circular line, and divided into three unequal parts. To the south, Africa is separated by the ocean from a land called the *fourth division of the world*, where the antipodes dwell, and which the excessive heat of the torrid zone had hitherto prevented from being visited. At the four sides of the world are represented the figures of the four winds, each astride upon a pair of bellows, which he works, and at the same time, with a conch-shell applied to his mouth, he blows hurricanes, as may be conjectured from his distended cheeks. At the top of the map, which is the east, are Adam and Eve, the serpent, and the tree of forbidden fruit: at their right hand is Asia.

The maps of the middle ages erred as often from the love of mere systematical arrangement, as from want of information. This is shown in the map of Martino Sanudo, which was published at the beginning of the fourteenth century, and has *Jerusalem* as its centre.

Passing by many other old maps, which were executed before the discovery of America by Columbus at the end of the fifteenth century, one remains to be noticed, which, if its reality were fully proved, would reduce the merit of that great navigator to the mere re-discovery of countries which were known, perhaps, a century before his time. This supposed discovery is indicated in a map constructed by Andrea Bianco in 1436, and preserved in the Public Library of Venice. In this map, in addition to much correct, false, and imaginative information, is represented, to the west of the Canary Islands, a country of great length, and of a quadrilateral form, to which is given the name of *Antilia*. This country, in the same situation and with the same name, is also found on the globe made by Martin Behaim, at the close of the fifteenth century. Many persons believe that the Antilia of Bianco was the continent of South America; while others maintain that it owed its existence wholly to the author's imagination. The maps of Bianco, however, contain much to interest us, independent of their intrinsic merit: in the first sheet of his collection is represented the mariner's compass, together with some nautical tables.

With the discovery of America, and consequent extension and improvement of geographical information, maps became more clear and correct, and began, at length, to be constructed on principles more in accordance with the precision of science, as we shall show in our next paper.

* See *Saturday Magazine*, Vol. XIII., p. 168.

A CERTAIN petulant Greek, objecting to Anacharsis that he was a Scythian; "True," said Anacharsis, "my country disgraces me, but you disgrace your country."

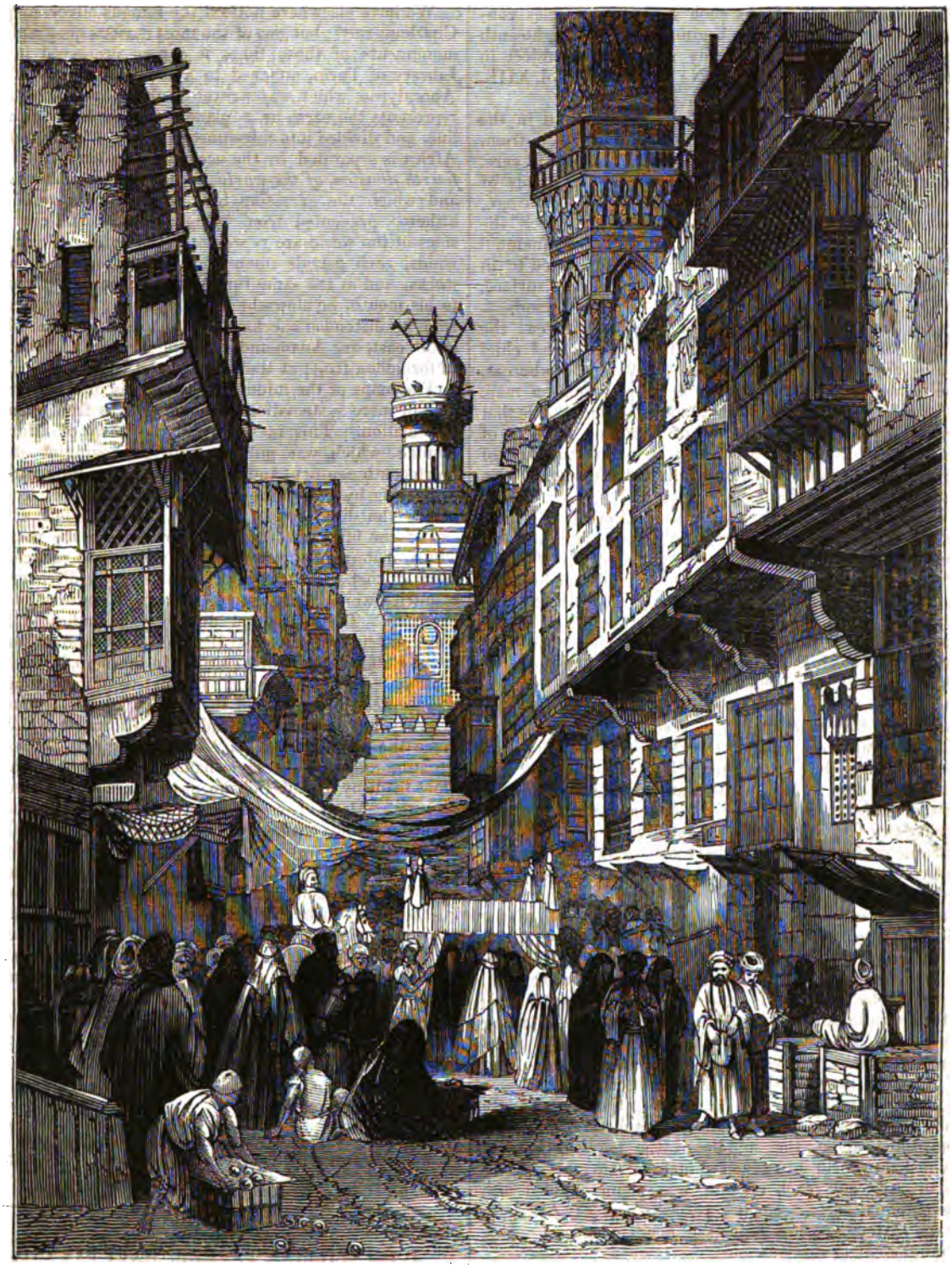
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 591. SEPTEMBER 18TH, 1841. {PRICE ONE PENNY.

SKETCHES OF CAIRO. III.



BEYN-EL-KASREYN, WITH THE MINARET OF THE TOMB OF SULTAN KALAOON.

SKETCHES OF CAIRO.

III.

THE mosques of Cairo are numerous, and some of them so large as to occupy spaces three or four hundred feet square. They are mostly built of stone, the alternate courses of which are generally coloured externally red and white. A large mosque commonly consists of porticoes surrounding a square open court, in the centre of which is a tank or fountain for ablution. One side of the building faces the direction of Mekkeh, and the portico on this side, being the principal place of prayer, is more spacious than those on the three other sides of the court. It has generally two or more rows of columns, forming so many aisles parallel with the exterior wall. Sometimes this portico like the other three is open to the court; in some cases it is separated from the court by partitions of wood, connecting the front row of columns. In the centre of its exterior wall is a niche, which marks the direction of Mekkeh; and to the right of this is the pulpit. Opposite the niche there is generally a platform surrounded by a parapet and supported by two small columns; and by it, or before it, are one or two seats, having a kind of desk to bear a volume of the Ckooran, from which a chapter is read to the congregation. The walls are generally quite plain, being simply white-washed; but in some mosques the lower part o the wall of the place of prayer is lined with coloured marbles, and the other part ornamented with various devices executed in stucco, but mostly with texts of the Ckooran (which form long friezes, having a plea ing effect), and never with the representation of anything that has life. The pavement is covered with matting, and the rich and poor pray side by side, without any distinction as to rank; unless, (as is sometimes the case,) the rich man is attended by his servant, who brings a prayer-carpet and spreads it for his master. The prayer-carpet is about the size of our hearth-rugs, and has a niche represented upon it, the point of which is turned towards Mekkeh.

The Mooslim prepares himself for prayer by ablution. In every mosque there is a tank or reservoir for the supply of water; the person, therefore, having tucked up his sleeves a little higher than his elbows, says, in a low voice, "I purpose performing the woodoo (ablution) for prayer." He then washes his hands three times; and this, as well as every after ceremony, is accompanied by its peculiar prayer or ejaculation. He then rinses his mouth thrice, throwing the water into it with his right hand. Next, with his right hand, he throws water up his nostrils (snuffing it up at the same time), and then blows it out, compressing his nostrils with the thumb and finger of the left hand; and this also is done three times. He then washes his face three times, throwing up the water with both hands His right hand and arm, as high as the elbow, he next washes three times, and as many times causes some water to run along his arm from the palm of the hand to the elbow; he then repeats the same ceremony with the left hand and arm. He next draws his wetted right hand over the upper part of his head, raising his turban or cap with his left. If he have a beard, he then combs it with the wetted fingers of the right hand; holding his hand with the palm forwards, and passing the fingers through the hair from the throat upwards. He then puts the tips of his fore-fingers into his ears, and twists them round, passing his thumbs at the same time round the back of the ears from the bottom upwards. Next he wipes his neck with the back of the fingers of both hands, making the ends of his fingers meet behind his neck, and then drawing them forward. Lastly, he washes his feet as high as the ankles, and passes his fingers between the toes.

The woodoo, (says Mr. Lane), is generally performed in less than two minutes; most persons hurrying through the act, as well as omitting almost all the prayers, &c., which should accompany and follow the actions. It is not required before each of the five daily prayers, when the person is conscious of having avoided every kind of impurity since the last performance of this ablution. When water cannot be easily procured, or would be injurious to the health of the individual, he may perform the ablution with dust or sand. This ceremony is called *tey emmoom*. The person, in this case, strikes the palms of his hands upon any dry dust or sand (it will suffice to do so upon his cloth robe, as it must contain some dust), and, with both hands, wipes his face; then, having struck his hands again upon the dust, he wipes his right hand and arm as high as the elbow; and then, the left hand and arm, in the same manner. This completes the ceremony

Not only is cleanliness required in the worshipper, but also in the ground, mat, carpet, robe, or whatever else it be, upon which he prays. Persons of the lower orders often pray upon the bare ground, which is considered clean if it be dry; and they are in no hurry to wipe off the dust which adheres to the nose and forehead in prostration, for it is regarded as ornamental to the face; but when a person has a cloak or any other garment that he can conveniently take off, he spreads it upon the ground to serve as a prayer-carpet.

Prayer is required of the Mooslim five times in the course of every day. First, about four minutes after sun-set; secondly, when the evening has closed and it is quite dark; thirdly, at day-break; fourthly, at noon or a little later; and lastly, between noon and night. The Prophet would not allow his followers to pray at sun-rise, nor exactly at noon or sun-set, because, he said, infidels worshipped the sun at such times. The several times of prayer are announced by the mooeddin of each mosque from the minaret. Mr. Lane says, "Most of the mooeddins of Cairo have harmonious and sonorous voices, which they strain to the utmost pitch; yet there is a simple and solemn melody in their chants which is very striking, particularly in the stillness of night."

The devotions of the Mooslims, consisting as they do for the most part of a heartless repetition of words and idle ceremonies, have no permanent influence on the people generally; and are, indeed, felt to be a burdensome task, so that "there are comparatively few persons in Egypt who do not sometimes, or often, neglect this duty [of prayer]; and many who scarcely ever pray."

For the forms of prayer, and a minute description of the ceremonies, positions of the body, &c., which accompany their utterance, we refer to Mr. Lane's work. In the course of these ceremonies many ejaculations are repeated thirty-three times. These repetitions are counted on a string of beads ninety-nine in number, with a mark between each thirty-three. The beads are formed of aloes or other odoriferous or precious wood, or of coral, or of certain fruit-stones, or seeds, &c. In the "vain repetitions," varied ablutions, and other ceremonials of the Mooslim faith, we have an exact counterpart of the practice of the Pharisees of eld so expressly condemned by our blessed Lord, as being the cleansing of the outside merely, while within was extortion and excess.

The Mooslim says the five daily prayers in his house or shop, or in the mosque, according as may be most convenient to him: it is seldom that a person goes from his house to the mosque to pray, except to join the congregation on Friday. Men of the lower orders oftener pray in the mosques than those who have a comfortable home, and a mat or carpet upon which to pray.

The same prayers are said by the congregation in the mosque on the noon of Friday, but there are additional rites performed by the Imam and other ministers on that occasion. The chief reasons for selecting Friday as the Mohammedan sabbath, were, it is said, because Adam was created on that day, and died on the same day of the week, and because the general resurrection was prophesied to happen on that day; whence Friday was named the day of El-Gom'ah, or the assembly. The

Mooslim does not abstain from worldly business on Friday except during the time of prayer.

The large mosques are open from day-break till nearly two hours after sun-set. The others are closed between the hours of morning and noon prayers; and most mosques are also closed in rainy weather (except at the times of prayer) lest persons who have no shoes should enter and soil the pavement and matting. Such persons always enter by the door nearest the tank or fountain that they may wash before they pass into the place of prayer; and generally this door is left open in dirty weather. The great mosque El-Azhar remains open all night, with the exception of the principal place of prayer, which is partitioned off from the rest of the building. In many of the larger mosques, particularly in the afternoon, persons are seen lounging, chatting together, eating, sleeping and sometimes spinning, or sewing, or engaged in some other simple craft; but Mr. Lane says that, notwithstanding such practices, the Mooslims very highly respect their mosques.

The other religious practices of the Mooslims consist in *alms-giving*, *fasting*, and *pilgrimage*. We will quote Mr. Lane's account of this last duty of the Mooslim.

It is incumbent on every Mooslim, to perform once in his life, the pilgrimage to Mekkeh and Mount Arafat, unless poverty or ill health prevent him; or, if a Hhanafee, he may send a deputy whose expenses he must pay. Many, however, neglect the duty of pilgrimage who cannot plead a lawful excuse, nor are they reproached for so doing. It is not by the visit to Mekkeh, and the performance of the ceremonies of circuiting the Kaabeh seven times, and kissing the "black stone" in each round; and other rites in the holy city, that the Mooslim acquires the title of *el-Hhagg* or the pilgrim; the final object of the pilgrimage is Mount Arafat, six hours journey distant from Mekkeh. During his performance of the required ceremonies in Mekkeh, and also during his journey to Arafat and until his completion of the pilgrimage, the Mooslim wears a peculiar dress, called *ehhram*, generally consisting of two simple pieces of cotton, or linen, or woollen cloth, without seam or ornament, one of which is wrapped round the loins, and the other thrown over the shoulders; the instep and heel of each foot, and the head, must be bare; but umbrellas are now used by many of the pilgrims. It is necessary that the pilgrim be present on the occasion of a khootbeh which is recited on Mount Arafat in the afternoon of the 9th of the month of Zool-Hheggah. In the ensuing evening, after sunset, the pilgrims commence their return to Mekkeh. Halting the following day in the valley of Mina (or, as it is more commonly called, Moona), they complete the ceremonies of the pilgrimage by a sacrifice (of one or more male sheep, he-goats, cows, or she-camels, part of the flesh of which they eat, and part give to the poor,) and by shaving the head and clipping the nails. Every one after this resumes his usual dress, or puts on a new one, if provided with such. The sacrifice is called *el-fida* (or the ransom), as it is performed in commemoration of the ransom of Ismaeel (or Ishmael) by the sacrifice of the ram when he was himself about to have been offered up by his father: for it is the general opinion of the Mooslims that it was this son, not Isaac, who was to have been sacrificed by his father.

Our frontispiece (selected from one of the views in Mr. Hay's admirable work) represents the collegiate and sepulchral mosque adjoining the Muristan. Over its entrance is the following inscription:—

In the name of God, the compassionate, the merciful, the Sultan El'-Adil es Salehee, Mohammed, the son of the deceased Sultan Kalaoon (may God sanctify his soul!) founded this honoured Kubbeh (or dome-crowned building) in the months of the year 695 A.H. (A. D. 1295-6).

The Minaret (says Mr. Hay) is partly coloured with broad alternate stripes of red and white, so commonly adopted in Cairo, pleasing in the relief it gives to the eye from the glare of an ardent sun, and the monotony of colours in so arid a climate.

The Sultan Kalaoon is said to have been a skilful physician, and superstition preserves in the mosque several talismanic mementoes of his reputation: amongst them are two columns, the touch of one of which is believed to be a sure cure of jaundice.

The celebrated charitable foundation which adjoins this mosque is destined to receive weak and insane patients. It was founded by the Sultan Kalaoon, and bears the following inscription:—

Our Lord the most great Sultan, el-Melik el-Mansoor Seyf-ed-Deen Kalaoon, es-Salehee, commanded to found this noble venerated Kubbeh and blessed college and blessed Beemaristan; and the commencement of the construction thereof was in Rabeea-el-Akhir, in the year 683 (A. D. 1284); and the completion thereof in Gumada-'l-oola, in the year 684.

Part of the minaret of the Barkrookeyeh is also represented. Three musicians with the zemr and tabl (hautboy and drum) precede a marriage procession; the female friends and relations of the bride follow, amongst whom the virgins are distinguished by their white dresses. The bride, supported by four others of her relations, is beneath the canopy; the corners of which, on the top of the poles, are adorned by embroidered handkerchiefs.

MAPS AND MAPPING. II.

Modern Maps.—Projection of the Sphere.—Gnomonic.—Orthographic.

Modern Mapping is particularly distinguished by the accuracy with which the relative positions on the surface of the earth are marked, in consequence of the aid afforded to the subject by astronomical discovery. Attempts were at first made to determine the longitude of places, by observing the eclipses of the sun and moon; but this method proved, on experience, so likely to be attended with error, that astronomers were constrained to abandon it. Galileo, by the discovery of the satellites of Jupiter, in 1610, introduced a more certain method, which was rendered available by means of the simultaneous observations of Picard and Cassini, at the observatories of Uraniburg (in Denmark) and Paris.

These experiments were made in the latter part of the seventeenth century; and, in consequence of their success, MM. Picard and De la Hire were employed to examine and to correct the map of France by astronomical observations. In executing this task, they were obliged to contract France within much narrower boundaries than it was supposed, according to the maps of that time, to occupy. They reduced it above one degree of longitude along the western coast from Brittany to the Bay of Biscay; and, in the same manner, they cut away about half a degree from the shores of Languedoc and Provence. These changes gave rise to a jest of Louis the Fourteenth, who, when complimenting the astronomers at the completion of their task, told them "he was sorry to observe that their journey had cost him a large portion of his kingdom."

But the map-makers of the times, with an inveterate attachment to the notions and methods of their predecessors, were tardy in taking to their service the astronomical observations which were multiplied round them every day. The map of the Mediterranean was not adjusted until the year 1720; and it was then done in consequence of Chazelles being sent to the Levant, to ascertain the difference in longitude between the shores of Palestine and the meridian of Paris.

William Delisle and J. B. d'Anville, by eschewing the errors of the ancients and adopting the light of modern science, brought the state of mapping to a greater perfection than it had heretofore obtained. While the French were thus engaged, at the beginning of the eighteenth century, the English laboured to the same end by means of Halley and Newton. As the process of map-making now began to attain the comparative completeness of recent times, we need not dwell further on this part of our subject, than to observe that, notwithstanding the advanced state of our astronomical and geographical knowledge, and the science and skill displayed in our great national and other surveys, we

must still regard maps as works in progress,—always unfinished, and still waiting the corrections to be supplied by the science and enterprise of succeeding ages.

We shall endeavour now to describe in a clear, but concise, manner, the fundamental principles which have been employed at various times and on various occasions for the production of maps, or scientific pictures of the earth's surface. The reader, being doubtless acquainted with the form of the earth, will see at once that the main object to be achieved is, to represent on a plane, or flat, surface that which is actually round, or spherical. The smaller the portion of the earth's surface to be represented, the more easily may this be done; but the nearer we approach to a hemisphere of the earth, the more difficult is this object to be accomplished, without distortion of some of the parts. All the methods used with this view are but approximations to correctness, as we shall presently explain.

From the spherical form of the earth, the divisions and varieties of its surface may be most simply and most accurately represented by means of a globe; and, in order to obtain a correct notion of its general geographical features, there is no mode of representation so satisfactory. Large globes are, however, expensive and inconvenient instruments; and small ones, by not admitting sufficient detail, are, for most geographic purposes, entirely useless. For instance,—with a scale which would make the map of England extend only about six inches from north to south,—thus giving one degree of latitude to an inch,—the diameter of a globe, on which the whole surface of the earth should be delineated, would be upwards of 9½ feet! In this representation we must also omit all the minute divisions of the countries of the earth, together with a vast body of geographical and statistical distinctions, invaluable to geography as a science.

We not only have *terrestrial* maps, which aim at representing the convex surface of the *earth*, but *celestial* or astronomical maps, are made to represent the (apparent) concave surface of the *heavens*.

Of terrestrial maps there are two sorts,—*geographic*, or land-maps; and *hydrographic*, or sea-maps: the former are specially styled "MAPS,"—the latter are usually denominated "Charts."

Geographical maps are *universal* or *particular*; the former representing the two hemispheres of the world,—the latter containing only particular portions of the globe. When maps give the nature of the *ground*, the roads, buildings, &c., in detail, they become *topographic* maps, which, necessarily embracing a very small extent of country, are not usually referred to any spherical projection, but are represented as geometric planes, the objects in them occupying the positions severally assigned to them by the trigonometrical operations of the survey. The same distinction is made in charts of small bays and harbours. In either of these cases they are often called "Plans." Maps which are intended merely to illustrate some of the sciences, bear their own peculiar names; as geological, mineralogical, or botanical maps.

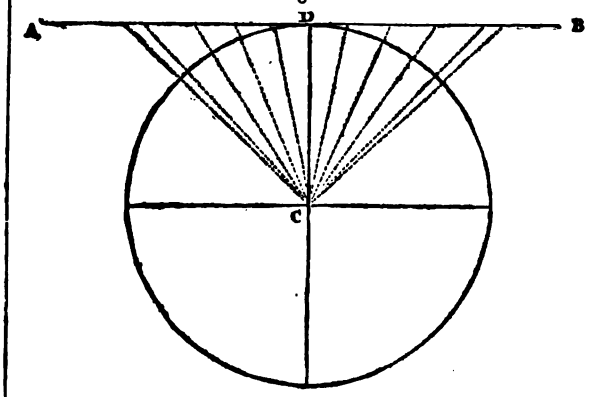
The various methods adopted by geographers in the construction of maps, may be referred to two principles,—PROJECTION and DEVELOPMENT.

The term "Projection," implies a *throwing forward*, or *laying down in front:* it is used to express generally the representation of the surface of a sphere according to the rules of perspective.

I. Of projection as referring to the first principle, there are four sorts in common use;—the Gnomonic or Central,—the Orthographic,—the Stereographic,—and the Globular: all these are distinguished from each other by the different positions of the projecting point in which the eye is supposed to be placed.

1. In the Gnomonic or CENTRAL Projection, the eye is supposed to be placed in the *centre* of the sphere, as at C; and the various objects to be delineated are transferred from the sphere to the plane A B, which is a tangent to its surface at D, where the rays are direct. It

Fig. 1.



is termed *gnomonic*, because of the connexion between the methods of laying down this projection and those for the construction of a *gnomon*, or sun-dial. The gnomon, or style of a dial, is the plate which projects from the surface of the dial-plate, the edge of its shadow determining the hour-line.

A slight consideration of this sort of projection makes it manifest to us that it is most profitably employed in astronomical maps; portions only of the concave sphere of the heavens being afforded at one view, as may be observed by reference to the preceding diagram; where it is evident that five or six *plane*-maps would be required to lay down the concave surface of the sphere whose centre is C. It will be observed also that an entire hemisphere cannot be thrown upon the plane A B.

In this projection, all the *great* circles of the sphere,—that is, all such as have their centres coinciding with the centre of the earth,—appear as straight lines; which property belongs to no other projection.

Though this projection may be advantageously applied to any maps of a limited extent, yet it is more particularly useful in maps of the polar regions of the globe. In this case, the meridians will be straight lines radiating from the centre, and the parallels of latitude concentric circles. Other cases of this projection, in respect of terrestrial maps, are seldom brought into use, because the construction is rendered troublesome, on account of the parallels of latitude becoming curves of difficult delineation.

2. The ORTHOGRAPHIC projection is so named, because the *delineation* is completed, as it were, by *right* lines. In this projection the eye is supposed to be at an infinite distance off; so that the visual rays leave the sphere in parallel lines. The perspective plane, on which a hemisphere is supposed to be delineated, is, therefore, at right angles to the visual rays;—hence, every point of the hemisphere is transferred to this plane by perpendiculars let fall upon it. It will be seen at once from the annexed figure, that the representation will decrease in accuracy with the increase of distance from the centre; the parts near the circumference being much foreshortened and distorted. For instance,—although the points A B C D are equidistant, their representatives *a b c* D are very unequally disposed.

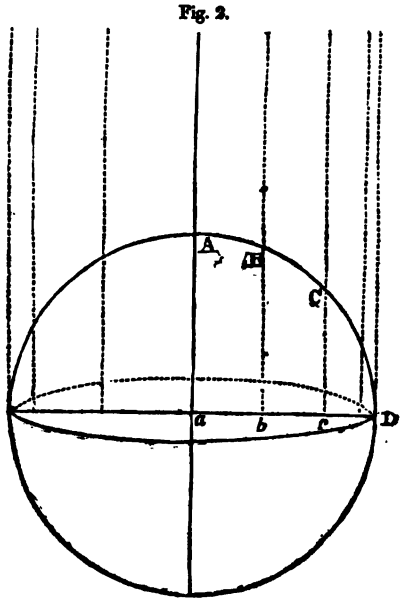
By this projection the surface of a hemisphere is reduced to that of a great circle of the sphere, or only half its hemispherical area; and, consequently, all parts of that surface are contracted, while equal parts of the spherical surface are not reduced to equal spaces on the map. On account, therefore, of the excessive contraction on approaching the extremities, this projection, though it is occasionally used for astronomical purposes, is almost exploded in the construction of geographical maps.

The orthographic projection of any object,—the terrestrial globe for example,—with all its circles, and the continents and islands on it surface, is *nearly* the representation or picture which an artist would delineate on a plane surface, if he meant to represent the globe at a considerable distance from the eye; and it is *exactly* the appearance which the globe would have, supposing an eye could view it at an infinite distance off.

In a polar map of this projection,—that is, a map which has one of the poles for its centre,—the meridians, as in the polar gnomonic maps, will be radii, and the parallels concentric circles. In an equatorial map, or one in which the equatorial regions of the globe are made to occupy the centre of the map, the plane of projection coincides with the plane of one of the meridians. In this case, the latitude-circles will form straight lines parallel with the equator, which will be also a straight line: the meridians will form portions of ellipses.

We shall notice the principles employed in the other modes of projection, in our next and concluding paper.

Fig. 2.



CHINA. XII.

The Island of Chusan—Military Occupation—Houses and Offices of the Chinese.

The extreme jealousy with which the authorities of the *Celestial Empire* are accustomed to regard all foreigners, enhances the value of any authentic information which may be obtained respecting a people, of whom the little we know only adds to our desire of a more thorough knowledge. Valuable, indeed, to the political economist would be an authentic statement of the statistics of an empire which in many things differs so widely from all the kingdoms of Europe; a country where civilization and literature seem to have advanced to a certain extent, and then for ages to have remained stationary; a country more densely peopled than any other part of the world, and yet where all emigration is so much discouraged, that, to use an expression of their own, "when a Chinaman leaves the flowery land to wander in countries beyond the sea, he rarely, if ever, is permitted to return to his native land;" a country which, notwithstanding its vast extent of territory and immense population, has for so many centuries been the seat of a permanent government more exempt from revolution than any other in the world. Various writers, indeed, have presented us with their accounts of China, but those which enter most into detail seem obnoxious to the remark of Lord Jocelyn, that their "lengthened labours require an appetite for the marvellous to digest. Dates and exact statements of finance, &c.," continues he, "are difficult to be correctly obtained in any country, but more particularly in these far eastern lands; and it is not probable that a jealous race like the Chinese would permit a stranger to become very intimately acquainted with their internal policy. Errors may have arisen not from any intentional mis-statement, but from a guileless disposition, giving too easy a credence to the natives of the country."

We have been careful in the information with which, from time to time, we have furnished our readers, to confine ourselves to such subjects as might fall under the observation of Europeans, and to draw from none but authentic sources; we now proceed to make a few extracts from the *Personal Narrative* lately published by Lord Jocelyn, who acted for some months in the capacity of Military Secretary to the China mission, but was compelled by severe illness to return home. Passing over the capture of the island of Chusan, we will accompany the conquerors into the city of Tinghai:—

"A few of the staff entered the town, accompanied by an interpreter, to quiet the fears of the inhabitants, whilst the troops remained in position on the outer side of the fosse. The main street was nearly deserted, except here and there, where the frightened people were performing the kow-tow* as we passed. On most of the houses was placarded 'Spare our lives;' and on entering the jos-houses were seen men, women, and children, upon their knees, burning incense to the gods; and although protection was promised them, their dread appeared in no manner relieved. Many were posting down the back lanes into the country with their spoil, for we afterwards found the goods principally carried away were taken by plundering natives, not by the legitimate owners.

"At last we came to the house of the Chumpin (Admiral): the gates leading to the entrance-yard were painted with huge ungainly figures, denoting, they said, Justice and Punishment. On one side was the Room of Justice, and thumb-screws and rattans were seen lying about. The path to the inner apartment, called the Hall of Ancestors, lay through an open court, round which were the offices of the government clerks. Some letters and papers half-finished showed the haste with which the town had been evacuated. Passing through the court we entered a guard-house, which led again to a trelliced walk, at the south end of which was the hall. Here on the couches were the pipes half-smoked, and the little cups filled with the untasted tea; cloaks, mandarin's caps, and swords lay about in confusion. Following up our research we at last came to the apartments of the ladies: these rooms were curiously furnished, and strewed with clothes of all descriptions and for all purposes. Silks, fans, china, little shoes, crutches, and paint-pots—the articles of a Chinese lady's toilette—lay tossed in a sad and tell-tale *mêlée*, and many of these fairy shoes were appropriated by us as lawful *loot*†.

"The town of Tinghai, or Tinghai-een, covers a large space of ground at the mouth of a valley or rather gorge; the neighbouring hills are clothed with wild shrubs, of which the tea-plant is the most predominant. The city lies embosomed in luxuriant paddy, except towards the rear, where a beautiful hill commands the whole town, dotted with clumps of fine trees, part of it being included within the wall and the fortifications that encircle the town. Two paved roads lead down to the suburbs on the shore, a distance of about three-quarters of a mile, flanked on the left by the Jos-house hill. The buildings in and near seem to consist of large warehouses belonging to the merchants of the town, and are very convenient for shipping and landing their cargoes. Tinghai is surrounded by a wall, about sixteen feet in thickness and twenty in height: there are four gates, agreeing with the cardinal points of the compass, traversed much in the

* A salute practised by an inferior to his superior, kneeling and striking the head upon the ground.

† A Bengalee word for plunder—at which, by the bye, they are peculiar adepts.

form of Marhattah forts, the principal one being on the southern point facing the sea. The wall is surrounded by a canal, which acts as a ditch to the fortification, except at the north-west angle. Two powder-magazines were found neatly packed and filled with ammunition, and with implements for the manufacture of powder: on the walls were mounted gingalls and cannon of various calibres, but none exceeding a nine-pounder; and wall-pieces with shifting breeches, each having eight or nine spare breeches attached to it, ready loaded. The streets are narrow, and many of the houses dry-rubbed, and polished outside; but the roofs are the most picturesque part of the buildings. Many of the respectable houses have pretty gardens attached to them, with a high wall shutting them out entirely from the town. The interiors of some of the houses were found beautifully furnished and carved: one that is now inhabited by the Governor, and believed to have been the property of a literary character, was, when first opened, the wonder and admiration of all. The different apartments open round the centre court, which is neatly tiled; the doors, window-frames, and pillars that support the pent roof, are carved in the most chaste and delicate style, and the interior of the ceiling and wainscot lined with fretwork, which it must have required the greatest nicety and care to have executed. The furniture was in the same keeping, denoting a degree of taste the Chinese have not in general credit for with us. The bed places in the sleeping apartments of the ladies were large dormitories, for they can hardly be called beds: at one corner of the room is a separate chamber, about eight feet square, and the same in height; the exterior of this is usually painted red, carved, and gilt; the entrance is through a circular aperture, three feet in diameter, with sliding pannels; in the interior is a couch of large proportions, covered with a soft mat and thick curtains of mandarin silk: the inside of the bed is polished and painted, and a little chair and table are the remaining furniture of this dormitory.

"Many of the public buildings excited great astonishment among those who fancied they were in a half barbarous country. The public arsenals were found stocked with weapons of every description, placed with the greatest neatness and regularity in their different compartments: the clothes for the soldiers were likewise ticketed, labelled, and packed in large presses, and the arrows, which from their size and strength drew particular attention, were carefully and separately arranged. To each arsenal is attached a fire-engine, similar to those used in our own country.

"The government pawnbroker's shop was also a source of interest: in it were found dresses and articles of every kind, evidently things belonging to the upper as well as the lower classes, for many of the furs here taken were of valuable descriptions: each article had the owner's name attached, and the date of its being pawned: this is one of the plans of the local government for raising their supplies. In the treasury there was a sad deficit for the prize-agents, no bullion being discovered in the chests: this, however, had been evidently cleared out by the government servants.

"The town is intersected with canals, which run at the back of many of the principal streets, thereby enabling the inhabitants to take their goods without trouble from their own doors to any part of the city, and thus communicate with the suburbs and port with the greatest facility, by the water-gate.

"Some of the joss houses, in this place, from what we have seen and heard from others, are to be surpassed by none in China. In Lord Macartney's mission, the one at Macao is mentioned as the finest specimen they saw in the whole tour, but all those who have visited the principal ones at Tinghai agree in their great superiority over it. In the great temple some of the figures in the principal hall are upwards of fifteen feet high, handsomely wrought, standing in the centre on a lofty pedestal, while around the walls are small images of the same description in all sorts of grotesque attitudes. We were particularly struck by one, the figure of a woman, with a child apparently issuing from her breast, and a glory round her head. It seems difficult to say from what this has arisen, unless from the pictures of the Virgin, which the Chinese formerly obtained from the Jesuit missionaries, and have thus distorted. A white elephant was likewise a great subject of discussion, being hitherto known only as a figure of worship in Birmah and Siam.

"Very few women were found in any of the houses, although, as it afterwards appeared, whole families of Chinese were then residing in the town, locked up in their dwellings, and were not discovered until the ulterior occupation of the city by the troops for winter quarters. All the women we saw here had the little feet which to the south is generally the appendage of the higher orders, and made use of a crutch when walking. Many of the silks taken in the houses of mandarins and people of wealth were of the finest textures, and covered with magnificent embroideries.

"Since I have seen many of the houses and temples of the Chinese, the paintings on the old china imported into England have struck me as the best delineation of the buildings and figures of these extraordinary people, and it is wonderful how correct they are in the main features."

He who contends for truths which he has himself been permitted to discover, may well sustain the conflict in which presumption and error are destined to fall. The public tribunal may neither be sufficiently pure nor enlightened to decide upon the issue, but he can appeal to posterity, and reckon with confidence on "its sure decree."—Sir David Brewster.

ON CHESS. No. XVII.

The Automaton Chess-Player. b.

The explanation which has been given of the Chess Automaton is admitted to be correct in all its details, except as regards the means employed by the concealed player to gain a knowledge of the moves of his antagonist and to make his own. This information belongs, however, to those minor details which could only be obtained by actual inspection of the interior arrangements of the machine:—we can scarcely admire too highly the sagacity of Mr. Willis, who, enjoying no advantages of inspection beyond those given to the spectators in general, succeeded, nevertheless, in discovering the secret of this famous machine, and demonstrating, by means of drawings and clear descriptions, the presence and position of the *animal power* which worked the automaton.

Mr. Willis imagined that the concealed player obtained a view of the chess-board by looking through the waistcoat of the figure, so that his head was separated from the spectators only by a thin veil. The objections to this theory are numerous: among the many eyes and ears, sharpened as they were by anxious curiosity, something would surely be seen or heard to lead to discovery,—the smallest motion or sound,—even the simple act of respiration in that confined situation, might detect the confederate. It is evident that de Kempelen foresaw all this, and was thus led to provide the ingenious means we are about to describe, as being the more secret and effectual for carrying on the game.

It is proper to state that M. Mouret himself, so long the secret colleague of M. Maelzel, furnished an account of the mysteries of the automaton, from which M. de Tournay, a member of the Paris Chess Club, has published his account in the first volume of *Le Palamède*, a French periodical, devoted chiefly to Chess. It is from this source that we have derived the following information, which may, therefore, in every respect, be considered authentic.

We stated in a former article, that, during the exposure of the interior mechanism, the exhibitor held a lighted candle to several parts of the machinery, and that he left his candle burning on an adjoining slab: the reason for this was to prevent any notice being taken of a wax taper in the interior of the machine, should its rays chance to flash out during the exhibition. The wax taper furnished the concealed player with light; and he was supplied with air by certain openings which did not appear, and by others which appeared necessary to the construction of the outer chest, or to the trunk of the Turk.

Within reach of the concealed player were, *first*, a handle by which he could guide the arm of the automaton; *secondly*, an elastic spring for moving its fingers; and, *thirdly*, a cord in communication with bellows for producing a sound to imitate "Check*." The principal contrivance requiring explanation is, that by which the player was made acquainted with the moves on the automaton chess-board, and thus enabled to repeat them on a smaller chess-board of his own. The concealed player is seated in that part of the chest immediately under the automaton's chess-board, and may be supposed to be looking up to the roof of his narrow cell. There, on what may be called his ceiling, he sees a representation of that chess-board, each square painted to correspond with the square above; the only difference being, that, in the automaton's board, some of the squares are occupied by chess-men and the rest are empty, while, in the board beneath, every one of the squares is numbered and furnished with a small metallic knob. Every chess-man on the automaton's board contains a small magnet, and each move made with any one sets in motion the metallic knob belonging to the squares from and to which such piece is played.

To illustrate this action more clearly, let the reader suppose himself placed under a table both surfaces of which are respectively divided into sixty-four corresponding squares: to each square of the under-side of the table is suspended by means of a very short thread a little iron ball. Now, as a magnet exerts its attractive force for unmagnetised iron and steel through any known substance, (except, of course, through iron and steel,) it is quite clear that the wood of the table will not prevent the magnets contained within the chessmen from attracting the little balls, and holding them, as it were, fixed to the under surface of the table: but, as there are only thirty-two chessmen actually on the board at the commencement of the game, it follows that thirty-two balls are attached to the wood of the table, while the other thirty-two remain suspended by their threads. As soon as one particular piece is taken up for the purpose of making a move it is obvious that the metallic knob immediately below it, being no longer subject to the magnetic attraction, falls as far as it is permitted by the length of the thread which supports it, and thus intimates to the person below that the square just occupied by a piece is now vacant;—but the piece being placed on another square, the knob below that square starts up and thus indicates the precise square to which the piece was played. The concealed player repeats the move on a little board, with which he is furnished, and which is numbered to correspond with the board on the underside of the table; this board is constructed in the manner of the chess-boards used in travelling so as to be safe from the danger of having the pieces upset. On this board he also makes his own move, and takes note of the numbers of the squares from and to which his piece is played;—he then sets the arm of the automaton in motion,—takes up the piece he designs to play,—the little knob falls down;—he plays the piece to the square intended, and the little knob rises up;—and thus the game proceeds.

* This last addition was made by M. de Kempelen, previous to his second tour.

This illustration will afford the reader a more perfect notion than has yet been given of the mode of working the automaton. We have nothing more to say respecting the mechanical part of this strange deception, and therefore beg to conclude our notice with a translation of the latter half of M. de Tournay's very amusing article.

M. Maelzel having entered into an agreement with M. Mouret, a very eminent chess-player, to conduct the internal arrangements of the automaton, the two confederates set out on a tour for the purpose of spreading the fame of the automaton, and reaping the benefit of the deception in many towns of England, Scotland, and Holland, where it was yet only known by report. The most complete success attended this journey. Wherever they went, spectators crowded to the exhibition to witness the triumphs of the automaton, who always kept his ground against his antagonists, and came off victorious, in spite of the advantage which he permitted to his opponent in giving him the pawn and move.

The exhibitor and his assistant went on for some time in perfect harmony: accounts were settled between them at every halting-place, and each was perfectly satisfied. It happened, however, on one of these occasions that M. Maelzel remained debtor to his assistant for a considerable sum, and as weeks and months passed by he still had some pretext for omitting its payment. At length a year had passed, without producing the desired settlement, and M. Mouret, weary of this delay, found the means of frightening his companion into his proper duty.

The automaton was then at Amsterdam: the king of Holland sent one morning to engage the exhibition-room, at the same time ordering a sum equal to three thousand francs, to be paid to M. Maelzel. The latter went joyfully to announce the good news to his associate—they breakfasted together, and were delighted at the thought of entering the lists with a crowned head. M. Maelzel then hastened to make such preparations as should make the exhibition as brilliant as possible. The performance was to commence at half-past twelve at noon. Twelve o'clock arrives, and it is time for M. Mouret to take his station in the chest. But he has not yet arrived, and M. Maelzel hastens to find out the cause of the delay. What is his surprise to find Mouret in bed, and seized with a convulsive trembling. "What do I see? what is the matter?" exclaimed Maelzel. "I have a fever," said his artful assistant.—"Why, you were very well just now!"—"Yes, but this is a sudden attack."—"The king will be here presently."—"He must go back again."—But what can I say to him?"—"Tell him the automaton has got the fever."—"No more of this folly."—"I don't wish to joke with you."—"Then pray get up."—"Impossible."—"Let me call a physician."—"It is of no use."—"Is there no means of subduing this fever?"—"Yes, one only."—"What is it?"—"To pay me the 1500 francs you owe me."—"You shall have them... this evening?"—"No, no, this moment."—M. Maelzel saw too plainly that there was no alternative, and went to fetch the money. The cure was wonderful; the automaton was never so attractive before. The King did not actually play, but he advised his Minister of War, who played for him. The pair were completely beaten by the automaton, but all the blame of the defeat was, of course, thrown upon the Minister.

Another anecdote is related of the automaton to the following effect. In one of the towns of Germany a conjuror had been exhibiting his various tricks, to the delight and amazement of the inhabitants, when the arrival of the automaton presented a still more powerful object of attraction, and left the poor fellow without an audience. Annoyed and jealous at the reputation of his rival, he went to be himself a witness of the new performance, and from his own experience in the art of deception he felt convinced that the chest contained a hidden player.

He therefore began all at once to raise a cry of "Fire," in which he was seconded by one or two companions. The spectators were seized with the greatest alarm, in which, strange to say, the automaton participated, and in his fright upset his adversary and tottered about as if he were mad. Happily, M. Maelzel, who preserved his presence of mind, was able to push him behind a curtain, where he soon became quiet, and recovered his usual dignified bearing. The alarm of fire was soon discovered to be false, and the conjuror did not gain anything by his attempt to undeceive the company. After this event M. Maelzel, in giving directions to a candidate for the office of concealed player, was accustomed to say, "If you hear a cry of fire, don't stir; I will come to your help."

The automaton was afterwards taken to North America, where it was exhibited, during several years, in the principal towns of the United States and Canada. South America then received a visit from this wonder of the age, and after a due exhibition of its powers the automaton finally sank into oblivion, and was deposited in a lumber-room at New York, where we believe it still remains, never again perhaps to be the means of exciting curiosity or interest.

THE WATER SCORPION.

(*Nepa linearis.*)

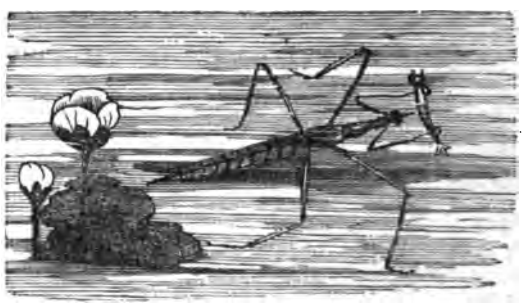
THE genus Nepa includes a family of aquatic hemipterous insects inhabiting stagnant waters, and preying on the smaller water insects, &c. The largest species yet known is *Nepa grandis*, a native of Surinam and other parts of South America. This species far exceeds all the European animals of that genus in size. It measures three inches in length. It lives in the water, in the larva and pupa state, and attacks not only other water insects but some animals much larger than itself. Madame Merian represents this species, among her Surinam insects, as preying upon tadpoles and young frogs. Its colour is a dull yellowish brown, with a few darker shades or variegations: the under wings are of a semitransparent white colour, and the abdomen is terminated by a short tubular process.

The term *Nepa* is supposed by some to have been originally a misprint from *Hepa*, a Latin word applied to the scorpion. The structure of the individuals of this family shows their rapacious character: they seize their prey by the assistance of their fore-legs and convey it to the mouth, which consists of a short, but acute and strongly articulated proboscis, with which they are enabled to inflict a sharp wound.

The common water scorpion (*Nepa cinerea*) is a very frequent inhabitant of stagnant waters in our own country. It measures about an inch in length, and appears when the wings are closed entirely of a dull brown colour; but when the wings are expanded, the body appears of bright red colour above, with a black longitudinal band down the middle: the lower wings, which are of a fine transparent white, are decorated with red veins: from the tail proceeds a tubular bifid process or style nearly of the length of the body, and which appears single on a general view, the two valves of which it consists being generally applied close to each other throughout their whole length. The animal is of slow motion, and is often found creeping about the shallow parts of ponds, &c. In the month of May it deposits its eggs on the soft surface of the mud at the bottom of the water: they are of a singular shape, resembling some of the crowned seeds, with a coronet of seven bristles; and before they are deposited, these bristles closely embrace the egg next to them in the ovary like a sort of sheath, as if a chain of thistle seeds were formed by placing each in succession in the bosom of the down of the one next to it. As the mother insect deposits these eggs in the stems of aquatic plants, the bristles, which are partly left on the outside, are probably intended to prevent the aperture from being closed up, by the rapid growth of the plant. When the young are hatched, they are not more than an eighth of an inch in length. The larvæ and pupæ differ in appearance from the complete insect in having only the rudiments of wings, and being of a paler or yellower colour. The perfect insect breathes by means of a single pair of spiracles placed behind, the lateral spiracles being obsolete or rudimental. This insect flies only by night, when it wanders about the fields in the neighbourhood of its native waters in quest of prey.

Nepa linearis is an insect of a highly singular aspect, bearing a distant resemblance to some of the smaller insects of the genus Mantis and Phasma. It measures about an inch and a half from the tip of the snout to the beginning of the abdominal style or process, which is itself of equal length to the former part, and the whole animal is extremely slender in proportion to its length: the legs also are long and slender, and the fore-legs much longer in proportion than those of the second species, *N. cinerea:* the colour of the animal is dull yellowish brown, the back, when the wings are expanded, appearing of a brownish red, and the under wings white and transparent. It inhabits the larger stagnant waters, frequenting the shallower parts during the middle of the day, when it may be observed preying upon the smaller water insects, &c. Its motions are singular; it often strikes out all its legs at intervals with a kind of starting motion, and continues the exercise for a considerable time. Its eggs are smaller than those of *N. cinerea* of an oval shape, and furnished with two processes or bristles divaricating from the top of each.

According to Rösel the red eggs of a water-mite are deposited upon the bodies of the water scorpions; and, what is very remarkable, these eggs appear to increase in size during the process of hatching. De Geer remarked, that the water scorpions, when much infested with them, became gradually weakened as the eggs increased in size.



THERE'S not a leaf within the bower;
There's not a bird upon the tree;
There's not a dew-drop on the flower;
But bears the impress, Lord! of Thee.

Thy hand the varied leaf designed,
And gave the bird its thrilling tone;
Thy power the dew-drop's tints combined,
Till like the diamond's blaze they shone.

Yes, dew-drops, leaves, and buds, and all,
The smallest, like the greatest things;
The sea's vast space, the earth's wide ball,
Alike proclaim Thee King of kings.—

MRS. OPIE.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 592. SEPTEMBER 25TH, 1841. {PRICE ONE PENNY.

TURKEY AND THE TURKISH PROVINCES.

ANTIOCH.

ANTIOCH AND ITS VICINITY.

IN the present series of articles we do not profess to adopt a strictly geographical arrangement of our subject, but to give *Sketches*, each of which will, to a certain degree, be complete in itself, while the whole collectively will illustrate the landscapes, the commerce, the buildings, the religion, the manners and customs, &c., of that widely-spread and highly-diversified empire over which the Grand Seigneur reigns. In the last two papers we selected Moldavia and Wallachia as the subjects of our notice. In the next two or three we shall visit some of the Asiatic towns of the empire, such as Antioch, Mecca, and Medina.

After having passed through Asia Minor, that remarkable peninsula which separates the Mediterranean from the Black Sea, we arrive at Syria, the eastern boundary of the Mediterranean. The manner in which this country is now governed was partly explained in the series of articles on the Syrian Coast, in our last volume, and we therefore shall here content ourselves with observing that Antioch is in the northern part of this region, within the pachalic of Aleppo or Haleb. This once splendid city, known as Antiocheia to the ancients, was the capital of the Syro-Macedonian empire, and being situated about midway between the cities of Constantinople and Alexandria, has since then been the centre of an extensive caravan trade. Its position, too, on the beautiful river Orontes, has placed it in favourable proximity to the Mediterranean.

With the exception of Jerusalem there is not perhaps another city of which the records present so sad a catalogue of revolutions and direful calamities as Antioch. Besides the usual plagues of Eastern cities, pestilence, famine, fire, and sword, it has been peculiarly subject to the most dreadful earthquakes. The city was founded by Seleucus Nicanor, 300 years before Christ, and was held under much tyranny and civil contest by the family of the Seleucidæ, until near the time of Pompey's conquest, and the reduction of the city and country beneath the Roman yoke, B. C. 65. It was in the reign of Trajan, in the year of our Lord 115, that we first find mention of those terrible earthquakes with which Antioch more than any other city has been visited. It is said that on that occasion Trajan, being at Antioch, narrowly escaped with his life, and the city was almost entirely destroyed; but the munificence of the emperor was employed to repair the misfortune, as far as it lay in his power, and the city soon resumed its ancient splendour and commercial aspect. It would be wearisome to our readers to go through the long list of disasters which befel this city,—sometimes a prey to famine and the plague; frequently overturned by earthquakes; now plundered by the Persians; then retaken by the Romans; at one time devastated by fire; at another time pillaged by the Turks; afterwards captured under circumstances of treachery, cruelty, and fanaticism by the Crusaders; and then soon after taken away from them, with great slaughter of the inhabitants, by the Sultan of Egypt, and thus remaining in a deserted and ruinous condition, till, with the rest of Syria, it passed into the hands of the Ottoman Turks, to whose empire it has ever since appertained.

We have the testimony of many travellers to the fertility of soil and richness of landscape which mark the vicinity of Antioch, even in its present neglected and degraded state, and we can therefore the better imagine what were its sources of wealth and delight in former days, when emperors were attracted by its pleasures, and Roman veterans were allured from their duties by the luxuries of this splendid city. The fo-

lowing is the description of the scenery on the banks of the Orontes, as given by Captains Irby and Mangles.

We now began to follow the banks of the river, and were astonished by the beauty of the scenery, far surpassing anything we expected to see in Syria, and, indeed, anything we had witnessed, even in Switzerland, though we walked nine hundred miles in that country, and saw most of its beauty. The river, from the time we began to trace its banks, ran continually between two high hills, winding and turning incessantly: at times the road led along precipices in the rocks, looking down perpendicularly on the river. The luxuriant variety of foliage was prodigious, and the rich green myrtle, which was very plentiful, contrasted with the colour of the road, the soil of which was a dark red gravel, made us imagine we were riding through pleasure-grounds. The laurel, laurustinus, bay-tree, fig-tree, wild vine, plane tree, English sycamore, arbutus, both common and andrachne, dwarf oak, &c., were scattered in all directions. At times the road was overhung with rocks, covered with ivy; the mouths of caverns also presented themselves, and gave a wildness to the scene; and the perpendicular cliffs jutted into the river, upwards of three hundred feet high, forming corners round which the waters ran in a most romantic manner. We descended at times into plains cultivated with mulberry plantations and vines, and prettily studded with picturesque cottages. The occasional shallows of the river, keeping up a perpetual roaring, completed the beauty of the scene, which lasted about two hours, when we entered the plain of Suadeah (Seleucia,) where the river becomes of a greater breadth, and runs in as straight a line as a canal."

Under the Macedonian kings of Syria the worship of the goddess Daphne was conducted in a grove near Antioch, which had been planted by Seleucus, the founder of the city. This beautiful grove of laurels and cypresses, with its temple and oracle, was long the most fashionable and splendid place of resort for Pagan worship in the East. The conduct of the people of Antioch seems to have closely corresponded with the instructions they received from the debasing rites of Pagan worship, for they are described to us as luxurious in life and licentious in manners. In such a soil as this we should scarcely have hoped to find Christianity taking root; but, nevertheless, we find on the arrival from Cyprus and Cyrene of certain converts who had fled from persecution to take refuge in Antioch, great numbers of the people of that city listened to the tidings they brought, believed the Gospel message, and embraced the religion of Christ. The name of *Christian*, first bestowed on the disciples in that city, was not applied to them in honour of their Lord, or simply to mark the distinction between them and others who adhered to paganism, but it was applied to them as a term of contempt and of the bitterest reproach; yet, notwithstanding the opprobrium attached to that name, many were found willing to bear it, and to separate themselves from the vices and profligacies of their city, that they might tread in the steps of their self-denying Lord. To this they were encouraged by the examples of Paul and Barnabas, who laboured during a whole year, by preaching and exhortations, to establish the new converts in the knowledge and belief of the truth. Thus was formed out of a luxurious and idolatrous people a community of true believers, at first comparatively few in number, but after a while increasing to a great extent, and becoming an illustrious and influential body, eminent for charity of spirit and consistency of conduct. It would detain us too long, to speak of the prosperity and increase of this church in the time of Chrysostom, at the latter part of the fourth century after Christ. It was a *worldly* prosperity, that was too great for the *spiritual* welfare of the Christians, and which appears to have prepared the way for succeeding apostasy.

We must now proceed to describe the remaining traces of former greatness, which were visible in this place, before the earthquake of 1822 laid it entirely in ruins. At that period a large part of the immense walls which formed the boundary of the ancient city were still standing. They were from thirty to fifty feet high, fifteen feet thick, and flanked by numerous square towers, and though much ruined, they distinctly marked the ancient boundary. There are different accounts as to the space inclosed by them. Mr. Buckingham says that they have a circuit of nearly four miles, but his statement is far below that of the more ancient authorities. The buildings at Antioch, at the period alluded to, were of a mean description, and no traces remained of architecture worthy of the "Queen of the East," as this city was once proudly named. The language spoken there was chiefly Turkish, though there were a few Christian families remaining, and some Jews. The Christians were accustomed to assemble for prayer in one of the caves or excavations in the rock, which are numerous in Antioch, and which appear to have been the ancient Necropolis*, or cemetery.

Great numbers of medals and engraved stones have been found in the neighbourhood of Antioch, especially during the winter season, when the ground has been laid bare by heavy rains. The most interesting are those of the Seleucidæ, the founders and beautifiers of the ancient city: there are also many of the period of Julius Cæsar and Augustus, with great quantities of Phœnician coins.

The modern name of Antioch is *Antakia:* it is very little known to the western nations: the attacks of its ancient *subterranean* enemy have reduced it almost entirely to ruins, and everything connected with that once proud and stately city must now be reckoned with the past.

* This word, translated *literally*, means "the city of the dead."

IN TIMES OF DISTRESS AND DANGER.

O God, that madest earth and sky, the darkness and the day,
Give ear to this Thy family, and help us when we pray!
For wide the waves of bitterness around our vessel roar,
And heavy grows the pilot's heart to view the rocky shore!
The cross our Master bore for us, for Him we fain would bear,
But mortal strength to weakness turns, and courage to despair!
Then mercy on our failings, Lord! our sinking faith renew!
And when Thy sorrows visit us, oh! send Thy patience too.—

BISHOP HEBER.

ON the whole, we make too much of faults; the details of the business hide the real centre of it. Faults? The greatest of faults, I should say, is to be conscious of none. Readers of the Bible, above all, one would think, might know better. Who is called there the man according to God's own heart? David, the Hebrew King, had fallen into sins enough; blackest crimes; there was no want of sins. And, thereupon, the unbelievers sneer and ask, Is this your man according to God's heart? The sneer, I must say, seems to me but a shallow one. What are faults, what are the outward details of a life, if the inner secret of it, the remorse, temptation, true, often baffled, never-ended struggle of it, be forgotten? 'It is not in man that walketh to direct his steps.' Of all acts is not, for a man, *repentance* the most divine? The deadliest sin, I say, were that same supercilious consciousness of no sin;—that is, death; the heart, so conscious, is divorced from sincerity, humility, and fact; is dead: it is 'pure' as dead dry sand is pure. David's life and history, as written for us in those Psalms of his, I consider to be the truest emblem ever given of a man's moral progress and warfare here below. All earnest souls will ever discern in it the faithful struggle of an earnest human soul towards what is good and best. Struggle often baffled, sore baffled, down as into entire wreck; yet a struggle never ended; ever, with tears, repentance, true unconquerable purpose, begun anew. Poor human nature! Is not a man's walking, in truth, always that: 'a succession of falls?' Man can do no other. In this wild element of a life, he has to struggle onwards; now fallen, deep abased; and ever, with tears, repentance, with bleeding heart, he has to rise again, struggle again still onwards. That his struggle *be* a faithful, unconquerable one: that is the question of questions. We will put up with many sad details, if the soul of it were true.—CARLYLE.

ON CHESS. No. XVIII.

On the Powers of the Pieces and Pawns.

We have hitherto supposed the reader to be acquainted with, at least, the alphabet of chess; and have not hesitated to employ many of the technical terms used in the game. In the concluding articles of this course we hope to furnish some curious and useful information on subjects which are scarcely noticed in books devoted to the elements of chess-play.

We quite agree with the suggestion of a recent writer that the best method of learning the names of the pieces with their moves, and the manner of placing them at the beginning of the game, is to take an hour's lesson from a friend. Supposing this to have been done, and the student to be engaged in actual play, he will soon perceive that the various pieces have different degrees of power; that a rook is of more value than a bishop or a knight, and that a pawn is of far less value than a minor piece. He will find the queen to be a match for several pieces, and may be willing to part with a rook, a bishop, and a knight, in order to capture his antagonist's queen. The different values of the pieces and pawns are soon appreciated by the player, and he endeavours to regulate his exchanges accordingly; nevertheless, few persons have attended to the circumstances which decide these values, and although they are numerically expressed in most elementary works yet the computations which have led to them are always omitted.

If a general had two bodies of troops similar in most respects, but one of which, from any cause whatever, could occupy only a particular part of any hostile district; while the other was capable of occupying different posts at distant points by a series of rapid movements; the first body would, generally speaking, be far less valuable than the second. Now something analogous to this occurs at chess: those pieces which are capable of taking the greatest range over the board, and of making the most rapid movements, are the most valuable. For the hills and valleys of a contested country, we have nothing but black and white squares on the chess-board: therefore the test of strength which we are now considering is this,—how many squares of the chess-board can each piece or pawn command at one time?

In the first place, let us suppose the board to be cleared of its pieces and pawns, and one of each to be placed on it in succession. Choose a central square, such as the king's 4th, and ascertain how many squares a pawn or a piece can command from that position. A pawn placed on that square commands two others, being those to which it would move if it made a capture. The knight could move to any of 8 squares; the bishop to any one of 13 squares: the rook to 14: the queen to 27; and the king to 8.—We refrain from demonstrating these numbers, because the reader can easily satisfy himself on this point, by placing the pieces, one after another, on the king's 4th square, all the other squares being unoccupied. So far, then, as this mode of comparison is concerned, the power of the pieces to move on to other squares is

Pawn ... = 2
Knight... = 8
Bishop ... = 13
Rook ... = 14
Queen ... = 27
King ... = 8

But we have now to inquire whether this proportion exists for all the squares equally. A very little experience will show that it does not: every piece is diminished in value as it approaches the edges of the board; but this diminution is not the same for all. Let us select the king's rook's square, and notice the change in the powers of the pieces. Testing them one by one, we shall find that the number of squares to which each can move is—

Pawn ... = 1
Knight... = 2
Bishop ... = 7
Rook ... = 14
Queen ... = 21
King ... = 3

Here it will be seen, that while the rook has not changed in value, the others have done so considerably, but in different ratios. If we select any other square intermediate between the centre and the corner, we shall find the numbers to be higher than the one, and lower than the other of our two lists. The knight, for instance, commands 2, 3, 4, 6, or 8 squares, according to where he may be situated; the bishop commands 7, 9, 11, 13 squares; and so on. The correct way, therefore, of comparing the powers of the pieces in moving over the open board is to suppose a piece to be placed on every one of the sixty-four squares in succession—to add up the respective powers in all these positions,—and to divide the result by 64. This is a process analogous to that employed in every department of science for the obtaining of an *average* or *mean*, whereby small errors, variations, and discrepancies, become absorbed, or expunged by mutual correction in the general result; and it is perfectly applicable in the present case. This being done, it is found that the *average* power of each piece to move over the open board is nearly as follows:—

Pawn ... = $1\frac{1}{4}$
Knight... = $5\frac{1}{4}$
Bishop ... = $8\frac{3}{4}$
Rook ... = 14
Queen ... = $22\frac{3}{4}$
King ... = $6\frac{1}{2}$

Here the bishop is said to be $=8\frac{3}{4}$, which means that in consequence of his sometimes commanding as many as 13 squares, and at other times as few as 7, the average of the whole is $8\frac{3}{4}$; and so of the others —the rook being of constant value in any position on the open board.

We have now something like a test of the respective powers of the pieces, by which we begin to see the advantage of making exchanges of one for another. But still this is nothing more than a groundwork on which to found subsequent calculations, for we have proceeded on a supposition which never occurs in practice,—viz., an open or cleared board. The intermixture of pieces among each other over the field of contest, gives rise to variations so complicated and so remarkable that it has required great analytical research from distinguished men, to trace them to their sources. We strongly doubt whether this has yet been done correctly; but still an approximation to correctness has been made, and we will briefly notice the manner in which the inquiry has been conducted.

We have hitherto considered the board to be cleared, and have ascertained the relative values of the pieces on that supposition. Let us now suppose the pieces and pawns to be arranged for the commencement of a game, and view their positions before the game begins. Here we are struck with the remarkable fact that the pieces are almost powerless; it is true they act as defenders of the pawns which front them; but as to the power of moving, none of them posssess it except the knight. The king, the queen, the bishop and the rook cannot move a step until some of the pawns are moved, and the knight owes his power of moving to his singular privilege of leaping over other pieces or pawns. So far, then, as the power of moving is concerned, a pawn is actually more powerful than even a queen at the commencement of the game.

Now in actual play, the relative powers of moving are *always* intermediate between the two extremes which we have mentioned, from the time of the first move being made, the constrained limits of the pieces begin to be broken, and their natural powers to be developed; but

on the other hand, these powers never attain the rank given to them by our first supposition, for the two kings—even if nothing else—are always on the board. The power of moving from square to square varies as the game proceeds, but not with equal rapidity: for instance;—the knight is powerful from the very beginning of the game, because whatever be near him he can leap over the intervening piece; while the rook is seldom of much use till several of the pieces and pawns are off the board. The rook increases his value by the *thinning* of the combatants more rapidly than any other piece, and therefore the ratio of his value is continually increasing.

It thus appears that the degree of openness of the board changes the proportionate value of the pieces, and it is difficult to fix a point where the power may be deemed an average between the highest and lowest. It is assumed, however, that we may suppose each party to have lost three pieces and four pawns, leaving four pieces and four pawns to defend the king. This is a fraction more than half the original forces, and may therefore be taken as an average or medium between the powers possessed by the respective pieces when the board is quite open, and when all the pieces are arranged for the commencement of a game.

If during the progress of a game, when about half the pieces and pawns have been removed by mutual exchanges, one of the players estimate the various powers of his remaining pieces, he may sometimes observe that a whole rank, or file of squares is blocked up by the intervention of one single piece or pawn, and moreover, that the intervening piece or pawn may be of his own party. In such a case his own troops actually stand in each other's way; and the less skilful the player, the more likely is this self-imposed blockade to occur. It may, and sometimes does happen in practice, that every square to which the knight's peculiar leap allows him to move, is occupied by one of his own forces; and the queen, after making a capture, is frequently found to be so hemmed in by inferior pieces and pawns,—some of her own party, and others belonging to the antagonist, but well supported—that she becomes almost useless. If a piece be blocked up by one of the same party, the moving power in that direction is temporarily suspended, until the obstructing piece is removed; and if the obstructing piece be of the opposite party, but of inferior value, and *supported*, to capture that piece would be a loss, so that a passage in that direction may be deemed practically blocked out. From all this it will be seen, that the comparative values of the pieces, at and about the middle of the game, are greatly modified by the *liability of obstruction*, arising from the intervention of a piece belonging to the same party, or of a supported inferior piece of the opposite party.

Other variations in value will be noticed in our next article on this subject.

FRUITS OF SINGAPORE.—The boats are seen entering the harbour before sun-rise, laden with pine-apples and other fruits: the former, although not equal to those of the English hot-house, bear no comparison, from their superior flavour, with the same fruit of either East or West Indian growth. Here they are in such abundance that captains of ships frequently purchase them by boat-loads to scour their decks, which from the acidity they possess, they have the property of whitening. But here, and here only in its prime, is found the most delicious of all fruits, the mangostein, which, once tasted, is never forgotten; and often, on a sultry Eastern morning, the traveller recollects the baskets of these cool and luscious fruits that were here his morning meal.—*Six Months with the Chinese Expedition.*

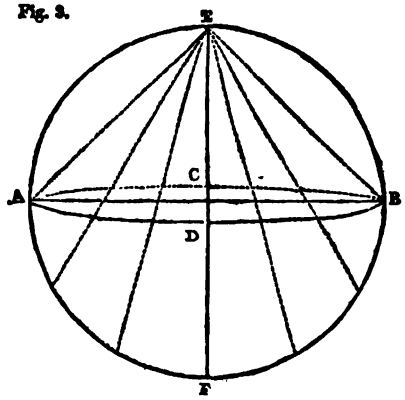
THE only difference between the camel and the dromedary is, that the latter is trained for riding, and the former for burdens. The distinction, at the most, is the same as between a riding-horse and a pack-horse; but, among the Bedawin, so far as our experience went, it seemed to amount to little more, than that the one had a riding-saddle, and the other a pack-saddle.—ROBINSON'S *Palestine.*

MAPS AND MAPPING: III.

THE STEREOGRAPHIC AND THE GLOBULAR PROJECTIONS.—DEVELOPMENT—CONICAL—CYLINDRICAL.—MERCATOR'S PROJECTION.—CONCLUSION.

3. THE STEREOGRAPHIC Projection of the sphere is so named, because the *delineation* is supposed to be made by taking a view through the *solid* sphere. In this projection, the eye is considered to be placed at the surface of the sphere, as at E; hence, it views the concave of the opposite hemisphere A F B, through the plane of that circle A C B D, in the pole of which the eye is placed

Fig. 3.



This projection is therefore the reverse of the orthographic: in the latter the hemisphere was thrown down upon the plane of a great circle; but, in the stereographic method, the hemisphere (A F B) is brought up to this plane, (A C B D,) which is the plane of projection.

Although, as is evident from the foregoing figure, all the various places on the concave hemisphere A F B suffer considerable contraction in being represented on the plane of projection A C B D, yet the advantages offered by this method of projection have brought it more into use than the methods before mentioned. It is especially calculated for maps of the world, as usually made in two hemispheres, from the circumstance of the representation being so little distorted at the extremities; as may be seen, in the figure, by tracking up the several parts of the concave circumference A F B to the plane of projection above.

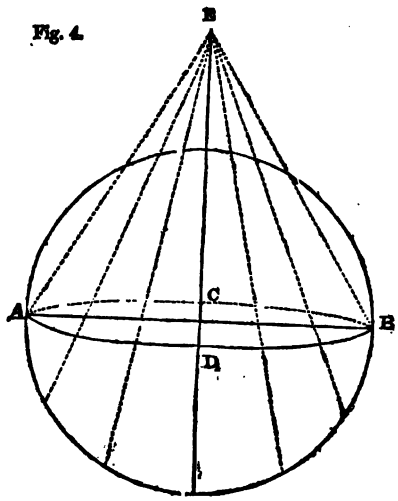
This projection is also preferable, on account of the meridians and parallels intersecting each other at right angles, as they do on the globe. Its construction also is less difficult than that of others; since all the great circles of the sphere are either circles or straight lines in the projection. The meridian of 20° W. is the one usually selected by English geographers for the plane of projection in these maps for the world, because this meridian passes very nearly between the eastern and western continents, which therefore occupy their respective hemispheres.

4. THE GLOBULAR projection is a modification of the last, and is so named, because, like the stereographic, it is chiefly used for making maps of the world.

We have already shown that the stereographic projection insures a general similarity in all its parts, and enables us to project at least a hemisphere in a single map, without any violent distortion of the configurations on the surface from their real forms. But as in the orthographic projection the borders of the hemisphere are unduly crowded together, in the stereographic their projected dimensions are, on the contrary, somewhat enlarged in receding from the centre. This will be visible by inspecting the previous figure.

To meet this inconvenience, and to give a general equability to the perspective, the globular projection was originated by M. de la Hire, on the following principle:—He supposes the eye to be placed at a distance

Fig. 4.



from the sphere equal to the sine of 45°; that is, if the diameter of the sphere be equal to two hundred, the distance of the eye from the nearest point of the circumference would be 70$\frac{7}{10}$. Some further modification was subsequently deemed desirable, in order that the meridians might intersect the equator at equal distances. This condition is very nearly fulfilled when the distance of the eye is 59$\frac{1}{2}$, the diameter being 200, as before.

In this projection, therefore, the arcs of the sphere, and their projections, are very nearly proportionate to each other; or, in other words, equal spaces on the spheric surface are represented by equal spaces on the map, by an approximation as near the truth as can be.

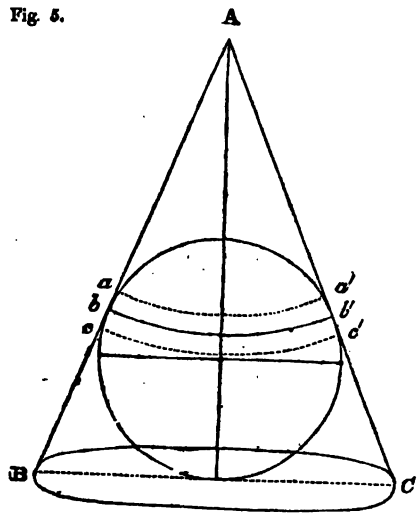
When the eye is placed at the surface of the sphere, as at E, (fig. 3,) all the meridians and parallels are represented on the plane of projection, as they really are on the surface of the globe itself; they are all circular: but, when the eye is placed out of the surface, as at E, (fig. 4,) the meridians and parallels lose the form of circles, and become ellipses, in proportion to the distance of the eye from the surface of the sphere. The meridians and parallels in the globular projection are, therefore, in reality, ellipses. They are not, however, usually drawn so; geographers contenting themselves with circular, in place of elliptical curves; and, as the deviation is excessively small in this projection, the practical utility of the map is not affected.

II. Projection, when referred to the principle of Development, is understood to be the unfolding, or spreading out, of the spherical surface on a plane. This, however, first supposes the sphere to be converted into a cone or a cylinder;—these being the forms, portions of which most resemble portions of a sphere, and which, at the same time, are susceptible of the required development.

The methods of projection before explained, are usually employed in the representation of a hemisphere; but are seldom used in delineating the geographical features of a single country: for these the method of *development* is commonly employed, which is of two sorts,—the Conical and the Cylindrical.

1. It is a known property of a *cone*, that its curve surface can be expanded into a plane; hence, any figure delineated on it, can always be exhibited exactly in all its dimensions on a plane surface. Now, a part of the surface of a sphere contained between two parallels of latitude, not very remote, will not differ much from the surface of a frustrum of a cone, that touches the sphere in the parallel midway between them. Hence, it will be seen that, in the conical projection, the sphere is supposed to be circumscribed by a cone A B C, which touches the sphere at the circle intended to represent the middle parallel of the map,—*b b'*. If the points on the sphere be now projected on the cone by lines drawn from the

Fig. 5.



centre, it is evident that, in a zone extending but a short distance on each side of the middle parallel, as the zone included between *a a'* and *c c'*, the points on the cone will very nearly coincide in position with the corresponding ones on the sphere. All the delineations having been thus made, the cone is then conceived to be unrolled, or *developed*, on a plane surface.

If the map be made to extend much above or below the middle parallel, the distant parts will be very much distorted. To remedy the defects of this projection, various modifications have been suggested and used; but into these our limits will not allow us to enter.

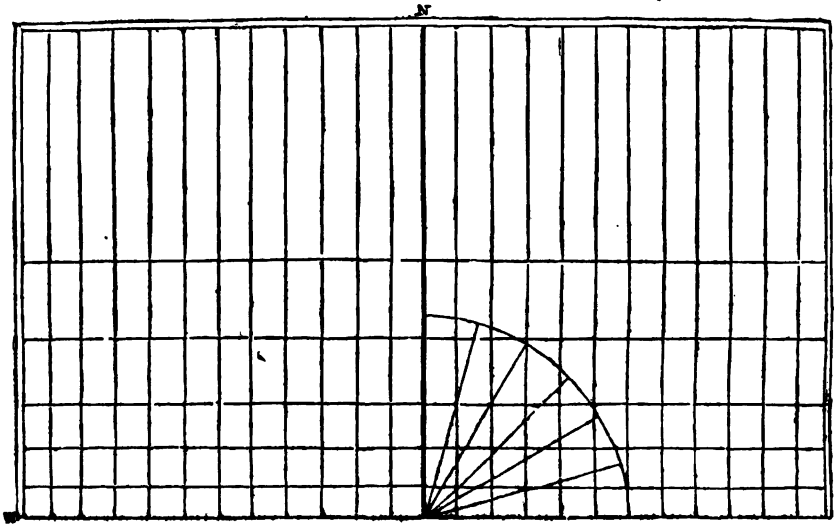
We cannot help observing, therefore, that the conic method of development is best adapted to represent countries to any extent in the difference of longitude, or round the whole circumference of the earth, if required to only a certain extent in difference of latitude. This projection is simple and easy of construction, owing to the facility of describing the parallels of latitude in concentric circles, and the meridians in straight lines.

At the first view of the case it might be difficult to conceive that the surface of the globe could be represented by a part of the surface of a cone; yet we may easily produce the surface of a cone from a piece of paper cut into a circular form or base; and we could as easily conclude that, if a cone, about twice the height of the semi-diameter of the globe, were to be conceived as standing on the same base with the hemisphere, namely on the equator, the surface of such a cone would in part lie within the surface of the globe, and then that the surface of the globe, at so small a distance from the surface of the cone, might be very easily projected or delineated on it; and in such a case, the projection of the countries and their bearings, distances, &c., will be very nearly the same on the surface of the included part of the cone, as on that of the globe itself.

2. From what has been said of the cone, it will be easily seen that a *cylinder* may be applied to the sphere in a similar manner, and that a zone of very limited extent in latitude may, without very material error, be developed on a cylinder. The peculiarity of this method is, that the meridians, as well as the latitude-circles, are projected in parallel straight lines; which circumstance makes it very applicable to nautical purposes, and from which originates the ingenious method, called *Mercator's projection*, which is now so universally adopted in our charts, and to which, in the last place, we must briefly allude.

The line on which a ship sails, when directing her course obliquely to the meridian, is on the globe a spiral; since it cuts all the meridians through which it passes, at equal angles. Owing to this and other causes, a map constructed on the principles of the spherical projections,

Fig. 6.



was found to be very inadequate to the wants of the navigator. Mercator justly considered, that mariners do not employ maps to know the true figures of countries, so much as to determine the course they shall steer, and the bearing and distance of those points or places which lie near their track; and this projection is the result of his efforts to secure to the seaman these desirable ends. The merit of this work is thought by many to be more justly due to Wright; for, although Mercator published his first chart in 1556, he omitted to explain the principles of it; and his degrees of latitude did not preserve a just proportion in their increase towards the poles. Wright, in 1599, corrected these errors, and explained the principles of his improved construction, in which the degrees of latitude on the chart were made to increase towards the poles, in the same ratio as the degrees of longitude decrease on the globe; by which means, the course which a ship steers by the compass, becomes on the chart a straight line; yet, the various regions of the map, however distorted, preserve their true relative bearing, and the distances between them can be accurately measured.

The modes of projection which we treated of, before entering upon those of Development, may be considered natural ones; inasmuch as they are really perspective representations of the surface of half the globe on a plane. Mercator's is entirely an artificial one, representing the sphere as it cannot be seen from any one point, but as it might be seen by an eye carried successively over every part of it. In it, the degrees of latitude and longitude bear always to each other their just proportion; the equator is conceived to be extended out into a straight line, and the meridians are straight lines at right angles to it, as in the figure. Altogether, therefore, the general character of maps on this projection is not very dissimilar to what would be produced by referring every point in the globe to a circumscribing cylinder, by lines drawn from the centre, and then unrolling the cylinder into a plane. Like the stereographic projection, it gives a true representation, as to form, of all the parts, but it varies greatly in scale, in its different regions; the polar portions in particular being of necessity extravagantly enlarged, as the upper part of the figure shows: and the whole map, even of a single hemisphere,—that is, from pole to pole, or 180°,—not being comprisable within any finite limits.

Mercator's chart may be produced by development in the following manner;—Conceive that a sphere, with the meridians and parallels and countries delineated on it, is inclosed in a hollow cylinder, and that the axis of the sphere coincides with that of the cylinder. Imagine now that the sphere is expanded in its dimensions, just as a soap-bubble is produced by blowing air into it, or as a bladder would swell in all directions by inflation, the parts always stretching uniformly;—the meridians will then lengthen in the same proportion as the parallels, till every point of the expanding spherical surface comes into contact with the concave surface of the cylinder: the meridians will at last become straight lines, and the parallels circles on that surface; the former in the direction of its length, and the latter parallel to its base, which is the equator, W. E. Suppose now the cylinder to be cut open along one of the meridians, and spread into a plane, the surface thus produced will be Mercator's chart.

In works on navigation are to be found tables of "Meridional parts," by means of which the meridians of these maps may be duly divided for drawing the parallels of latitude and the positions of places accurately laid down.

Thus we have endeavoured to lay before our readers the fundamental principles on which the art of map-making has for several centuries been built up. If he should be pleased with the subject, he may now advantageously have recourse to such treatises of this sort as show up, in all its details, the entire process of constructing maps and charts of all kinds.

IN the infancy of a science there is no speculation so absurd as not to merit examination. The most remote and fanciful explanations of facts have often been found the true ones; and opinions, which have in one century been objects of ridicule, have, in the next, been admitted among the elements of our knowledge. The physical world teems with wonders, and the various forms of matter exhibit to us properties and relations far more extraordinary than the wildest fancy could have conceived. Human reason stands appalled before this magnificent display of creative power, and they who have drunk deepest of its wisdom will be the least disposed to limit the excursions of physical speculation.

The influence of the imagination as an instrument of research, has, we think, been much overlooked by those who have ventured to give laws to philosophy. This faculty is of the greatest value in physical inquiries: if we use it as a guide, and confide in its indications, it will infallibly deceive us; but, if we employ it as an auxiliary, it will afford us the most invaluable aid. Its operation is like that of the light troops which are sent out to ascertain the strength and position of an enemy. When the struggle commences, their services terminate; and it is by the solid phalanx of the judgment that the battle must be fought and won.—SIR DAVID BREWSTER.

RURAL SPORTS FOR THE MONTHS.

SEPTEMBER.

Nor on the surges of the boundless air,
Though borne triumphant, are they safe; the gun,
Glanced just, and sudden, from the fowler's eye,
O'ertakes their sounding pinions: and again
Immediate brings them from the towering wing,
Dead to the ground: or drives them wide dispersed,
Wounded and wheeling various, down the wind.
These are not subjects for the peaceful Muse,
Nor will she stain with such her spotless song;
Then most delighted when she social sees
The whole mixed animal-creation round
Alive and happy. THOMSON.

On the first day of the present month, the shooting of Partridges becomes lawful, and is joyfully entered on by a vast number of persons throughout the country. It generally forms the young shooter's first lesson at game, and in order to be successful he carefully notes the habits of the bird at different seasons, and under different sorts of weather, &c.

In the zeal for destruction which seems to pervade all ranks and classes of society at this particular period, it may seem out of place to speak of the usefulness of the animals which form the especial object of pursuit, or to offer a recommendation in their behalf, that the war against the species may be regulated, and kept within due bounds, so that man may not reduce their numbers to his own injury. In the case of the partridge, as well as in that of many other birds, it is fully believed that if we understood their habits aright, we should often be disposed to cherish that which we are now zealous to destroy.

The common partridge seems in an especial manner to belong to an agricultural country. Wherever the soil is extensively cultivated, there it thrives and multiplies, and with all the persecutions to which it is subjected, we never find these birds driven to make their permanent abode in wild and solitary places. Their pertinacious adherence to the same turnip-field, or to the same clover-matted stubble, has aptly been comp red to that of a mountain-tribe of human beings clinging to their fastnesses in a war of extirpation.

Now it cannot be supposed by any reflecting mind that the habits with which these birds are endued, their attachment to a cultivated soil, and the rapid multipli cation of their species, are without their particular use and end in the economy of Nature. There must be a good design in it, and one in which the welfare of the human race is concerned. It has been well said that "that which invariably accompanies improvement, is, we may rely on it, necessary to improvement;" and it is not difficult to see that it is so in the present case. All birds that feed upon the ground live almost exclusively upon *insects*, under which general name we include many small living creatures, to whom the application of the term, in its strict sense, does not belong. And although the partridge also feeds on grain, seeds, bulbous plants, &c., and thus partakes of the produce of the cultivated field with man, yet the service it renders in consuming the overplus of insects may be set against this; and if it could be fairly estimated would, we doubt not, be found far more considerable than the injury sustained.

The time of the year, the weather, and many other circumstances influence the practice of the partridge-shooter. The usual way of proceeding in search of these birds in September is to try the stubbles first, and then the potato and turnip-field, where the birds frequently bask when such fields lie contiguous to the stubble. When the shooter *breaks* a covey, he proceeds without loss of time to search after the dispersed birds, for the parents begin to call almost immediately on their alighting, the young ones answer, and in less than half an hour, if not prevented by the presence of the shooter and his dogs, the whole of the covey will be re-assembled, probably in security in some snug corner, where the shooter least thinks of looking for them. Dispersed birds afford what is called the "best sport" to the shooter, for while under the protection of the old ones they are guided by the superior sagacity and watchfulness of their parents, but when deprived of them, they are truly discomfited, and do not know whither to run for safety: as the season advances, birds are longer in re-assembling. In this respect much also depends on the weather and the time of the day. The habits of partridges at the early part of the season, are somewhat as follows.—Just before sunrise they run to a brook, spring, or marsh, to drink; from which place they almost immediately fly to a field where they can find plenty of insects, or to the nearest corn or stubble field, when they will remain, according to the state of the weather, and other circumstances, until nine or ten o'clock, where they go to bask. The basking-place is frequently on a sandy bank-side, facing the sun, whe the whole co vey remains huddled together for several hours. About four or five o'clock they return to the stubbles to feed, and about six or seven they go to their *jucking-place*, a place of rest for the night, where they remain closely packed together until the morning. Their times of feeding and basking vary according to the length of the days. While the corn is standing, partridges will often remain in it the whole day. The uncertainty as to where partridges may be found increases after the middle of October. At this time if much disturbed they will occasionally take shelter in the woods, where they may be flushed one by one.

The number of birds in a covey varies much, but is considered to average from ten to fifteen. The length of flight of a covey also differs according to the nature of the ground. In a fertile farm in a corn country, the sportsman has not any great distance to travel before he comes again upon his covey, sometimes the mere passing of a hedge will enable him to reach them, but in a very open country, where the birds have been used to a much more extensive range, a mile, or even more, has been traversed in following their flight.

The partridge of Britain (*Tetrao Perdix*, Linn.) is of two kinds, the common, or ash-coloured (*cinerea*) and the Guernsey or red-legged (*rufa*); but the latter is almost entirely confined to the Channel Islands.

The common partridge is so well known that it is almost unnecessary to describe it. The weight of a full-grown male bird in good condition is about fifteen or sixteen ounces, that of the female, about two ounces less; the length of the entire bird is about thirteen inches, the breadth twenty. The bill, and naked parts, are of a bluish-gray colour, with the exception of a red spot behind the eye. The general colour of the plumage is brown ash, elegantly mixed with black, and each feather is streaked down the middle with buff-colour. The feathers of the throat, cheeks, and over the eyes are reddish-orange. The legs of the male are furnished with a blunt spur, or knob behind, and the breast with a crescent of a deep chesnut colour. The feathers of the female are in general of a duller hue than those of the male, but it is only the experienced sportsman that can distinguish the difference of sex when the birds are on the wing. Those who are able to do this always aim at the male bird, as there is a greater number of male partridges, than of females.

The age of partridges is discovered by the bill and legs, which are yellowish when young, but become of a dark bluish-white as they increase in age. Another method is, by examining the appearance of the last feather of the wing, which is pointed after the first moult, but in the following year is quite round. The size, and plumage of the partridge, however, is much affected by local circumstances: the finest birds are found in those situations where cultivation has been the most successful, while in districts that are comparatively unproductive

and sterile, the appearance of the bird has occasionally led to the opinion of its being a distinct species, or at least a variety.

Partridges are the most prolific of the wild gallinidæ, the eggs being seldom fewer than twelve in number, while they are often as many as twenty, and have on several occasions greatly exceeded that number, as the following instances will show. In the year 1793 a partridge nest was found in a fallow field on the farm of Mr. Pratt, near Ferling, in Essex, with thirty-three eggs; twenty-three of the eggs were hatched, and the birds went off; the number of the eggs was ascertained before hatching to decide a bet laid by a person who refused to credit so unusual a production. In order to cover the whole of the eggs, the female had piled up seven in a curious manner in the centre. A nest was also found in 1798, at Elborough, Somersetshire, in a wheat-field, with twenty-eight eggs. Mr. Daniel tells us that upon the farm of Lion Hall, in Essex, belonging to Colonel Hawker, 1788, the following incident was known to many persons. A partridge, instead of forming her nest as usual, on the ground, chose the top of an oak pollard, and this tree, too, had one end of the bars of a stile fastened to it, so that the passengers along the footway, in getting over the stile, disturbed and uncovered the bird before she began to sit close. The farmer, whose name was Bell, apprised Mr. Daniel of the circumstance, which he laughed at as being the report of the work-people, and said it was only a wood pigeon they had mistaken for a partridge; but the former, who had killed some hundreds of partridges, so positively affirmed his having beheld the bird upon the nest on the tree, and also having told the eggs to the number of sixteen, that Mr. Daniel was persuaded to ride to the spot, where the partridge was seen sitting: in a few days she hatched sixteen eggs; and her brood, scrambling down the short and rough boughs which grew around the trunk of the tree, reached the ground in safety.

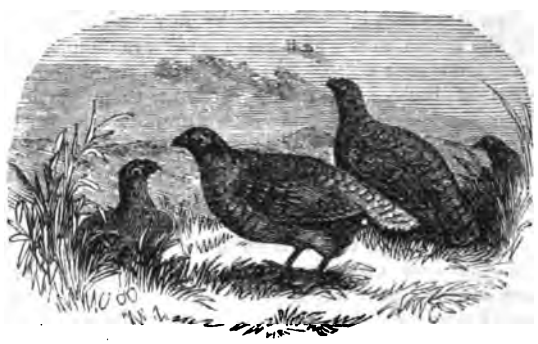
The nest usually made by the partridge is merely a hole scratched in dry mould, or a few bents and decayed leaves strewed roughly in the hollow made by an ox or horse's hoof. Sometimes it is formed on hedge-banks, sometimes in corn or grass, frequently in clover. It is often found beneath the shelter of some low bush or tuft of grass. The eggs are generally laid about the latter end of May; they are of a greenish-gray colour, and the female sits so remarkably close, that not only does she not rise when her nest is approached, but it is difficult to drive her from it. She is at this time very bold in driving off her winged foes; and magpies, cranes, and other plunderers of nests, are valiantly opposed in their depredations. The male partridge does not share the labour of incubation, but is attentive to his mate, and joins her in defending the brood, and uses many arts to decoy visitors away from the nest. Frequent and heavy rains during the time of laying and incubation are very unfavourable; many of the eggs are chilled or drowned, and if the weather is wet when the young first leave the shell the cold benumbs the little strength they have in their legs, and they soon fall and die, even while their mother is leading them forth in search of food.

The affection shown by the partridge for its young is peculiarly strong and lively. Both parents seem equally assiduous, after the birds are hatched, in leading them out, and directing them to their proper food, and in protecting them by every means in their power from their enemies. Insects, larvæ, and eggs, are the food of young partridges; ant-eggs, in particular, seem necessary to their existence. At this period the male and female frequently sit close together and cover the young with their wings, exhibiting such evident marks of parental tenderness, that few persons would willingly disturb or injure them in such a situation. When they are accidentally discovered, or alarmed by a dog, they act in a manner thus described by an eye-witness:—

The male first gives the signal of alarm by a peculiar distressful cry, throwing himself at the same moment more immediately in the way of danger, in order to mislead the enemy; he flies, or rather runs along the ground, hanging his wings and exhibiting every symptom of debility, whereby the dog is decoyed by a too eager expectation of an easy prey, to run further from the covey. The female flies off in a contrary direction, and to a greater distance, but soon after secretly returning she finds her scattered brood closely squatted among the grass, and collecting them with haste by her jucking she leads them from the danger before the dog has had time to return from the pursuit.

Partridges are easily tamed, but do not breed in con finement. An instance is given of one of these birds becoming so familiar in a clergyman's family where it was reared, that it would attend the parlour at breakfast and other times, and would afterwards stretch itself before the fire, seeming to enjoy the warmth as if it were its natural bask on a sunny bank. The dogs of the house never molested it, but at last it fell under the paws of a strange cat and was killed. The eggs of partridges are frequently collected, and hatched under domestic hens, the broods being afterwards turned into preserves for the purpose of stocking them. In this case, the food of the young birds should at first consist of the eggs of the small ant; afterwards they should be fed with fresh curds mixed with lettuce, chickweed, or groundsel. It will be some time before they can eat grain readily.

In Franklin's *Constantinople* we meet with an account of the method practised by the Arabs of Monnt Lebanon in taking the partridge, so that "to hunt the partridge upon the mountains" is still, as in Scripture times, a custom of that country. The Arabs make a slight square frame of wood, of about five feet in height, over which they stretch an ox-hide perforated in three or four places. The ox-hide is moved quietly in an upright position, and the Arab concealing himself behind it, is hidden from the view of the game, which unsuspectingly allow the sportsman to come within shot of them. The Arab, seeing through one of the apertures, quietly protrudes the muzzle of his long musket through another hole, and firing upon the birds, as they feed in coveys upon the ground, kills a great many of them.



PARTRIDGES.

IN all these, (the articles of faith comprised in the creed,) the sky of my belief is serene, unclouded by doubt. Would to God that my faith, that faith which works on the whole man, confirming and conforming, were but in just proportion to my belief, to the full acquiescence of my intellect, and the deep consent of my conscience! The very difficulties argue the truth of the whole scheme and system for my understanding, since I see plainly that so must the truth appear, if it be the truth.—COLERIDGE.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 593. SUPPLEMENT, SEPTEMBER, 1841. { PRICE ONE PENNY.

THE GODDESS OF FORTUNE.

Found by Mr. Gavin Hamilton, near Rome, and now in the British Museum.

A BRIEF HISTORY OF THE FINE ARTS. No. II.

Section IV. Roman Sculpture.

We have already stated that the decline of Grecian sculpture commenced at the period of the dismemberment of the Macedonian empire, and extended through nearly two hundred years. The fatal blow to its existence was given by the success of the Roman arms. In the year 146 B.C. the celebrated city of Corinth was sacked by the conquerors, and deprived of the treasures of art which had been accumulating for ages. Athens was subdued in the year 86 B.C., and other cities sharing the same fate, the glory of Greece was extinguished, and her splendid works of art were left to the mercy of a people little qualified to appreciate their merit.

The character of the Romans as the conquerors of the world is so little in accordance with the cultivation of the milder arts of peace that we are not surprised to find sculpture, in all ages of their history, existing rather as a plant of foreign growth, partially cultivated in their soil, than as an indigenous production of their own clime. The passion for conquest was too prevailing to allow of enthusiasm for art. The works of Greece and Etruria were valued and admired as the fruits and trophies of their victories, but were not viewed in the light of instruments by which their own moral condition might be improved, and the barbarism of their nation in some measure removed. At the conquest of Syracuse, indeed, we find some appearance of the true feeling of admiration for the arts in the reply of Marcellus, who was accused of unjustly robbing the devoted city of its marble treasures. He declared that he had done so for the good of Rome, that the public edifices might be embellished, and that his own countrymen might acquire a taste for the arts and elegance of the Greeks. But although each victory was followed by the accession of new specimens of art to Rome, and although among these specimens, some of the most exquisite examples of Grecian performances were brought before their eyes, we do not perceive a taste for sculpture to have been awakened, in any measure corresponding with the advantages thus offered to them in the study of the best models of the art. The passion for forming collections, which is stated to have been extremely prevalent at the period to which we now allude, doubtless evinces considerable interest in works of art, and to that source do we probably owe the preservation of numerous specimens which would otherwise have been destroyed. But in the hands of the Romans sculpture soon degenerated, for they had inherited the works of Greece without any portion of the genius of their authors.

During the latter period of the Commonwealth, various sculptors of distinguished name were resident in different parts of Italy, and attempts were successively made by Sylla, Pompey, and Cæsar, to elevate the arts in Rome. They collected statues, gems, &c., and invited to the capital the yet remaining sculptors of Greece, by whose labours not only Rome itself, but many of the cities of Asia Minor, Spain, and Gaul were embellished.

But the chief impulse was given to sculpture as practised in Rome, during the sway of Augustus. The patronage of a monarch who could wield for his purposes the energies of the whole enlightened world, was necessarily of high advantage to the art. He carefully collected the finest works that could be procured, and fixed them in prominent situations in the city: no expense was spared to enrich the different collections of statues and paintings, but of all the sculptors whose names have reached us as having flourished in this, the best age of the arts in Rome, every one is Greek, and chiefly Athenian. Pasiteles, Arcesilaus, Tropirus, and Evander, were some of the most eminent. "The arts, indeed, were revived, but the creative spirit which infuses life and soul into their productions, which stamps them with originality and thought, could not be recalled. The character of design and of execution is evidently the same as that by which the last era of sculpture in Greece is distinguished, or rather it is superior; for settled government, ample reward, and certain honour, not only drew to Rome every man of talent, but also awakened new powers. But in the finest specimens, there is no evidence of new energies, aided by the union of two separate modifications of talent; nor in the inferior, any exhibition of the more original, though it might be ruder, efforts of an aspiring and distinct national taste. Either or both of these effects would have been apparent, had there been native, prior to this importation of Greek, artists. On the contrary, everything in the sculpture of this era discovers a descent from a state of higher excellence; every touch exhibits rather what has been, than presages the eminence for which we are to draw upon futurity. From Augustus to Trajan, during a period of a hundred and forty years, the principles and practice of the Greeks continued to be observed, with such difference only as political causes can easily reconcile, but with a progressive decay. The most favourable periods during this space were the reigns of Vespasian, Titus, and Trajan; for the reign of Nero, whose taste, like his morals, was corrupt, which Pliny has assumed as an epoch in the Roman school, was propitious to practice, not to improvement." (Memes.) The taste and energy displayed by Trajan gave new animation to the arts in Greece and Italy, and his reign, together with those of Hadrian and the Antonines, has been accounted the golden age of sculpture in Rome. The distinguishing characteristic of the art as it existed in Hadrian's time, was extreme minuteness of finish, indicating the labour more of the hand than of the mind. Mechanical dexterity was displayed in careful working with the file, the chisel, and the drill, and an air of studied and affected refinement pervaded the whole, to the utter extinction of all characteristic and natural expression. "For the sublime is substituted the difficult, the florid for the elegant; and in every remaining specimen, we can readily detect the taste which preferred a poetaster to Homer, or the laboured inanities of the Sophists, to the vigorous and manly eloquence of Demosthenes and Cicero." The style thus adopted has been considered sufficiently distinct from preceding methods to be called the Roman style of sculpture; and as exhibiting the national taste for display and ornament, it is, perhaps, rightly so denominated, although it appears tolerably certain that even during the flourishing period of the art, Greek, and not native, artists were employed on all the chief works of sculpture that were produced at Rome.

To the munificence of Hadrian, the arts were indebted for much of the prosperity which they enjoyed at the commencement of the second century. Several of the ancient temples which had fallen into decay, were, by his orders, restored, and others were erected in a style not unworthy of the best days of art. He completed the temple of the Olympian Jupiter at Athens, and enriched it with a statue of the god in gold and ivory, and with several other works of art, among which was a colossal statue of Hadrian himself. This prince had a splendid villa eighteen miles from Rome, the celebrated villa of Tivoli, where he collected together such a vast number of specimens of ancient art, that even up to the present time, every fresh excavation has led to the discovery of some object of interest. In 1771, Mr. Gavin Hamilton discovered the head, of which a drawing is given at p. 125. It was found in that part of Hadrian's villa called the Pantanella, and near it a similar head, but of inferior execution, which was deposited in the Vatican. The first-named head is thus spoken of by Mr. Taylor:—

"We cannot too strongly express our admiration of this very spirited and masterly piece of sculpture: its general character evidently shows that it represents a head of one of the Homeric heroes. Many attempts have been made to ascertain the particular person whom it was intended to represent, but hitherto without success. It is considerably inclined to the right, and is looking upward with a countenance expressive of the deepest anguish both of mind and body. The hair of the head, though not long, is in bold and distinct masses, and the beard is very short and close to the face.

"We may remark a great similarity between the character of this head and that of Menelaus in the French collection, supposed to have belonged to a group representing Menelaus supporting the dead body of Patroclus. We are not, however, inclined to think that the head now before us was intended to represent Menelaus, as the head of that hero is in the instance just mentioned, as well as in every other instance which we are acquainted with, covered with a helmet, and the beard is much more ample."

The nose in this statue, and a small portion of each lip, are modern, as are also part of the lobe on the left ear, and a tuft of hair on the top of the head. The bust on which the head is placed is not antique: the line of separation is

marked in the wood-cut. The height is one foot, nine inches and a half.

In the reign of Hadrian some of the superstitions of Egypt were introduced into Italy, and became so mixed up with the worship of the Romans, that the gods of the Nile were publicly honoured, and their statues admitted as objects of adoration. This enlargement of the catalogue of their deities caused a great demand throughout the empire, for statues and other representations connected with the Egyptian ceremonies. Accordingly we find that the villa of Tivoli was decorated with imitations of Egyptian figures and subjects, and that remains of this nature have been found in considerable number, both there and in other parts of Italy.

After the death of Hadrian sculpture rapidly declined, though during the time of the Antonines some attention was paid to the art, and busts of some merit were executed.

The best and most characteristic sculpture of Rome was that which adorned their public monuments, and which recorded the history of their emperors' triumphs; as in the Trajan column, where the exploits of the emperor are represented in one continued winding relief from the base to the summit, and are crowned by the statue of the emperor himself. In the difference of style and execution in the two columns of Trajan and Antonius, may be distinctly traced the rapid decay of the art during the period which elapsed between their erection, while still later, in the arch of Septimus Severus the low condition of the art is fully manifested. The arches raised to Titus, Trajan, Severus, and Constantine are among the principal compositions of Roman sculpture. "They breathe," says Flaxman, "the spirit of the people they commemorate, which was conquest and universal dominion; they owe no inspiration to the muses, urge no claim to the epic, or dramatic; they are the mere paragraphs of military gazettes, vulgar in conception, ferocious in sentiment; on the columns and arches, the principal objects are mobs of Romans cased in armour, bearing down unarmed, scattered Germans, Dacians or Sarmatians, soldiers felling timber, driving piles, carrying rubbish, shouldering battering rams, killing without mercy, or dragging or binding captives."

The efforts of Constantine, on his ascending to the imperial dignity, were directed to restore that feeling for the arts which seemed almost to have departed from Rome. He established schools of architecture, and distributed rewards and privileges among the most distinguished students, endeavouring thus to excite an honourable emulation among the youths of the capital. By these means he succeeded in raising several considerable buildings, but in adorning them he was obliged to have recourse to the sculptors of a former age, and to seek afresh in the cities of Greece and Asia Minor for such remains of ancient art as had been left by former collectors. He also gave employment to artists of his own time, but their works, chiefly in metal, showed but too plainly that the spirit of ancient art was irrecoverably lost. To give the reader some idea of the profusion of plundered specimens of art which were eventually collected together at Rome, we may state that no less than eleven thousand exquisite works of Greek and Etruscan sculpture adorned the imperial city in the time of its splendour; so that Petronius, alluding to the taste for these ornaments and the profusion of them, observes, that it was easier to meet a god in Rome than a man.

The establishment of a seat of imperial government at Constantinople was a fatal blow to the greatness of Rome, and another cause for the continued decline of the arts in the latter city; yet it is from the reign of Constantine, when Christianity was established in the empire, that the dawning of modern art is recognised. It will be seen from the foregoing sketch that Roman sculpture is so inferior as to bear no comparison with that of Greece. The best works were produced by Greek artists, and the attempts of the Romans are for the most part characterized by poverty of invention, meanness of design, and unskilful execution. The art seems seldom to have met with efficient patronage, except where busts or portrait statues were required to please the vanity of individuals; accordingly we find the excellence of these latter works conspicuous above that of the other departments of art; indeed, the collection of busts of successive emperors reaching through a period of three centuries, constitutes an invaluable series, as it regards the history of art.

In the illustrations which accompany our notice of Roman sculpture our readers will observe that though each of the specimens we have represented was found near Rome, there is reason to believe that in each case the work was either in part or wholly the work of Greek artists. The statue of the Goddess of Fortune was found by Mr. Gavin Hamilton near the *Via Latina*, a short distance from Rome. The description runs thus: "The statue of the Goddess of Fortune with a modius on her head; her right hand holds a rudder, the lower part of which rests upon a globe, and her left hand supports a cornucopia filled with corn and fruits of different kinds. The modius and the cornucopia allude to the abundance supposed to be conferred by this goddess upon her votaries. From a passage in Horace, in which Fortune is styled the mistress of the sea, it has been conjectured that the rudder is a symbol of her particular influence over that element. But it is more probable that the rudder is a metaphorical symbol of her general dominion over the affairs of the world, and this latter supposition seems to be very fully confirmed by the circumstance of the rudder being placed upon the globe.

"Fortune was worshipped in very early times by the Greeks; but her image does not appear on any of the more ancient Greek medals, and indeed of the numerous figures of her now extant both in marble and bronze, not one appears to be of high antiquity. It was not till the time of the Roman emperors that the worship of this goddess was universally established. After this period one of the most common figures on the Greek and Roman coins was that of Fortune; and as a proof of the great ascendency which she was believed by the Romans to hold over the interests of mankind, no less than twenty-five temples were erected to her at Rome."

Of this statue, the neck and nearly the whole of the modius are modern, and the head, though ancient, has belonged to another figure. The right hand and the whole of the rudder, except a small portion attached to the globe, are also modern, as is the left hand and the lower part of the cornucopia. The height, including the pedestal, is three feet, one inch.

The terminal head of the bearded Bacchus, of which we give a representation at p. 128, was found near the *Porta Latina*, at Rome. It is crowned with vine-leaves, which descend on each side of the face, and with a broad ample diadem, hanging loosely over the forehead in the form of a festoon. Most of the ancient marble termini have a square cavity on each side of them, rather below the shoulders, but in the present example, these cavities are filled up by two square projections on which the ends of the diadem rest. These projections show the ancient mode of joining a number of these termini together by rails or bars, in allusion to the use to which termini were originally applied, namely as fences, and boundaries.

In concluding these remarks on Roman sculpture we may naturally be led to inquire, what is the reason that a people so distinguished as this, for manly and persevering talent, should, of all the nations that have held supremacy in the earth, be the least remarkable for any bold peculiarities, or successful darings of their own genius? especially in an art where the practice is laborious, the principles grave and simple, and therefore, apparently well adapted to suit the nature of Roman talent? We have already anticipated the most evident answer to this inquiry, in alluding to the warlike and impetuous spirit of the conquerors of the world, which led them rather to action and business than to elegant acquirements. But we must also remember that the art or sculpture was the peculiar eminence of the people they had conquered, and having no respect for its professors, and considering them as little better than slaves, they were the less likely to admire and successfully to practise the art itself. Then the amazing profusion of the beautiful works of Greece, presented them with such abundant means of decorating their buildings and palaces, that there was the less inducement to employ native artists in the execution of works which could not fail of being greatly inferior to these which came ready prepared to their hand.

Section V. Modern Sculpture in Italy.

Flaxman is of opinion that we may justly date the beginning of modern art, from that period when painting and sculpture ceased to be employed, as heretofore, on the pagan gods, but were engaged to illustrate subjects connected with Christian worship. Thus from the time of Constantine the arts slowly and gradually revived, and an original character made itself apparent, even in the rude and almost frightful attempts of the early Christians. While inspired, perhaps, with a taste for sculpture by means of the scattered remains of Grecian art, they

drew, at the same time from their own resources, and were by no means servile copyists of the artists of a former age. In those early days many of the artists united the three professions of painting, sculpture, and architecture, and sculpture can scarcely be said to have assumed a distinct and appropriate character until the time of Nicolo Pisano, who commenced his profession early in 1200, and exhibited a surprising degree of skill and talent in his art. His works, with those of his son Giovanni and his scholars, still adorn many of the cities of Italy. In the cathedrals of Pisa, Pistoja, Siena, and Orvieto, are magnificent marble pulpits enriched with bassi relievi and statues. These are the works of the Pisani, and give a high idea of their taste and feeling. The façade of the cathedral of Orvieto is decorated with relievi in white marble by the same artists, illustrating some of the principal facts recorded in the Sacred Writings. These performances have attracted much admiration on account of the simplicity and grace manifested in the arrangement of the several groups, and in the form of the individual figures. Nicolo Pisano lived to an advanced age, and though several excellent works were performed by his scholars, it was not till the succeeding century that a worthy successor appeared. This was his grandson, Andrea Pisano, who in the year 1330 executed a work of great beauty at Florence, illustrating the life of St. John. It is in bronze, and forms one of the gates of the Baptistery in that city. His marble statues were considered by Flaxman to be inferior to those of Nicolo and Giovanni, his predecessors.

The first academy of design was established at Florence, in 1350, and at the close of the same century sculpture was once more firmly established throughout Italy, and itinerant sculptors, not unskilful in their art, wandered from thence over Germany, France, and even England, where their works have been traced in the sculptured ornaments of Gothic edifices. Thus did the mild genius of Christianity prove favourable and mainly instrumental in the revival of the arts. "Upon the age now passing in review," says Memes, "when Freedom again rises, we behold genius also revive, as if the sweeter sensibilities and the manlier virtues had altogether slumbered through the long long night of ignorance and despotism. It is thus that spring, breathing on bank and wild wood, unchains the bud and the blossom from the tenderest floweret to the hardy oak."

The labours of the fifteenth century in all the elegant arts will ever hold a distinguished place in history. In the first year of that century no less than six great masters were competitors for the same public work, the bronze doors of the baptistery of Florence, and each of these competitors afterwards became the head of a flourishing school. Their names are, Brunelleschi, Ghiberti, Jacomo della Quercia, Nicolo Lamberti, Francisco di Valdambrino, and Simon dei Colle. Ghiberti, then a youth of twenty-three, was the successful candidate, and the work thus assigned to him occupied forty years of his life, and is one of the proudest triumphs of modern art. The southern door of this edifice had previously displayed the talents of Andrea Pisano: the northern and eastern doors were to carry to future generations the fame of Lorenzo Ghiberti. The northern door represents the life of our Saviour,—the eastern door the most striking events of the Old Testament history. Michel Angelo is said to have admired them so highly that he declared them fit to be "the gates of Paradise."

"Among the illustrious names for which this period was remarkable, that of Donatello stands deservedly conspicuous. The works of this artist are exceedingly numerous, and are scattered all over Italy: they are executed in every variety of material, and in various degrees of magnitude. His marble statue of St. George was greatly admired by Michel Angelo, as was also the statue of St. Mark, decorating the same building, the church of Or San Michele at Florence. Respecting the latter statue it is said that, after surveying it for some time, Michel Angelo exclaimed, 'Mark, why dost thou not speak to me?'" The scholars of Donatello have been divided into two classes,—those who were fellow-labourers with him, and whose celebrity is chiefly owing to the assistance they lent him in his great works, and those more legitimate disciples who, without following servilely in the track of their master, derived their knowledge in the first place from his precepts, and subsequently added to, and even improved on the principles with which they set out.

Respecting this age it has been justly said that modern sculpture attained its manhood. A character of truth and simplicity, faithful imitation of nature, and just expression, visibly begin from the time of Nicolo Pisano, whose own style was remarkable for sweetness and absence of pretension. A degree of meagreness and restraint long pervaded the early school, yet even in the works of the fourteenth century, the art being chiefly dedicated to devotional purposes, and to the memory of departed worth, "an air of dignified sincerity, a touching portraiture of the gentler affections, diffuse over the mind of the spectator a melancholy yet pleasing serenity, to be felt rather than described." In the succeeding century the style becomes more elevated yet not less true: the execution at the same time is bold and felicitous, and the imitation is faithful to nature. One department of sculpture attained an eminence in the fifteenth century which has not been surpassed. This is the high and the low relief practised by Donatello and Ghiberti, where the sacred subjects represented appear to have imparted to the genius of the sculptors a portion of their own sacred dignity and holy feeling.

It would be foreign to our purpose to describe the works, or even to record the names of the meritorious artists who filled Italy during the fifteenth century: suffice it to say that so great was the advancement in sculpture, so numerous the schools of art, that the age in its bright prospects has been compared to that of Pericles: "it wanted but a Phidias to crown its prosperity, and in Michel Angelo the genius of Greece seemed to be supplied." This extraordinary man united the professions of sculptor, painter, and architect, and was illustrious in each. The opinions respecting him may differ in many respects, but all must agree that his works have a strongly marked character of their own, and possess wondrous power and dignity. His vast and almost superhuman conceptions were executed in a most astonishing manner, and with a perfect knowledge of the true principles of his art. Michel Angelo Buonarotti was born in 1474, and living to the advanced age of ninety, was the means of influencing the efforts of art during the greater part of the sixteenth century. "Anatomy," says Flaxman, "motion and perspective of figure, the complication, harmony, and grandeur of his grouping, with the advantage and facility of execution in painting and sculpture, besides his mathematical and mechanical attainments, in architecture and building, which, together with the many and prodigious works he accomplished, demonstrate how greatly he contributed towards the restoration of art." Some of the most renowned works in sculpture by Michel Angelo are the colossal statue of Moses, a grand, but not altogether pleasing performance; the statues of Lorenzo and Giuliano di Medici; the David; the Virgin and dead Saviour, &c. Several of his works are left in an unfinished state. Impatient of slow progressive toil, yet full of activity and industry, his power of performance could not keep pace with his rapidity of conceiving and designing magnificent undertakings. In the course of his history, which we shall hereafter lay before our readers, in a separate form, it will be also apparent that he had many difficulties to contend with in the execution of his works, arising from the jealousies or ignorance of those by whom he was surrounded. The following opinion on the most celebrated work of this artist may be taken, with some little modification, as giving a good idea of the general character of his performances. "The Moses, on the tomb of Julius the Second, amid the creations of genius rises a solitary and matchless monument. Without model among the productions of antiquity, it has remained inimitable and unimitated in modern times. Neither in Nature do we find its prototype: it is the extraordinary conception of an extraordinary mind. Thus isolated by its own peculiar sublimity of character, this statue exhibits a striking resemblance of the imagination whence it derived existence. We behold a being who awes, who subdues, yet who fails to interest, for with such humanity entertains no communion of feeling. Here the sublime is too exclusively sought in the vehement and the marvellous; every effort is forced; every trait exaggerated, and the whole shows a daring originality, verging on the extravagant and the false." Notwithstanding the faults which the manner of Michel Angelo threw more or less into all his productions, the majesty and grandeur of his statues compensated in a great measure for minor defects. In the numerous imitators of this great man we find that for the most part the *manner* of the artist, including the faults, is carefully retained, while the stamp of originality and genius is wanting to atone for the latter.

Michel Angelo died in 1564, and was buried in the church of Santa Croce, in Florence, and a monument is raised to him, in which is a basso relievo, by himself, of a Madonna and Child. This monument is the work of his pupils, and

consists of a bust of Michel Angelo over a sarcophagus, with statues, supposed to represent Painting, Sculpture, and Architecture.

Jacopo Tatti, better known as Sansovino, had studied with Michel Angelo, and after his death became the founder of a numerous and respectable school. He presided over the Venetian works of sculpture and architecture, and enjoyed a considerable reputation. Sansovino was more deserving of praise as an architect than as a sculptor. His statues in the Palace of the Doge at Venice are elaborately executed, but very deficient in the true principles of art. At the time at which we have now arrived a profusion of ornament began to be employed in works of sculpture, and artists bestowed that time and attention on minutiæ of mouldings, scrolls, flowers, and other merely ornamental works, which should have been given to the higher objects connected with their profession. There are fine specimens of this elaborate style at Venice, but the richness of the effect makes but poor amends for the loss of simplicity and purity.

One of the most distinguished contemporaries of Michel Angelo and of Sansovino, was Baccio Bandinelli, born in 1487. He was extremely unpopular with his brother artists, and is said to have contended with Michel Angelo with less generous weapons than those of talent. To him is attributed the unworthy act of secretly destroying that great artist's celebrated cartoon of the Battle of Pisa, which was considered at the time the most excellent design that had ever been executed, so that all the most celebrated painters of the day attended to make studies from it. We find the works of Bandinelli unsparingly condemned by contemporary writers; but from the specimens of his performances which still remain he seems entitled to a high place among the sculptors of his day. The bassi relievi round the screen of the high altar in the Duomo of Florence are deserving of much praise for their breadth and fine treatment, but they are liable to the charge which attaches to all the other performances of this artist, *i.e.*, a too great appearance of the picturesque, leading to an affected style of attitude and arrangement. In the church of the Annunziata at Florence, is a marble group the size of life, where he introduced his own portrait in the form of Nicodemus supporting Christ. This was intended for his own monument. To this artist was intrusted the restoration of the right arm of the celebrated group of the Laocoon. The next artist to whom we shall refer is Benvenuto Cellini, born at Florence in 1500. He was distinguished as a sculptor, founder, and chaser. His larger works are preserved at Florence, and are all executed in bronze; his smaller works abound in foreign collections, and consist of tasteful ornaments, medals, bucklers, dagger-hilts, &c. Guglielmo della Porta was one of the most skilful of the Lombard sculptors. His most remarkable work is the monument of Paul III. in St. Peter's at Rome. The recumbent figures in this monument representing Prudence and Justice, the one a female of advanced years, the other a young and beautiful woman, are exceedingly fine. We have already noticed the taste for fine and curious execution which had become prevalent among artists, to the exclusion of graceful simplicity and repose. This destructive taste was fully illustrated in the works of Giovanni di Bologna, otherwise an artist of talent, and endued with bold and elegant conceptions. Baldinucci, who wrote the life of this artist, records an interview between Giovanno and Michel Angelo, when the former was quite in the commencement of his career, and was anxious for the opinion of the great master of a figure which he had executed with great care and minuteness of finish. After examining the work, "Young man," said Michel Angelo, "learn to compose your figure before you try to finish it." In 1598, Bernini was born at Naples, and though greatly inferior to the mighty master of the last century, he proved himself to be possessed of endowments by which he might have reached a high standard of excellence. He had genius, fertility of fancy, wonderful powers of execution, with unceasing industry and ambition to excel. But he had neither a well-regulated judgment, nor a manly taste. To him the simplicity of the ancients seemed meagreness and poverty of style, while the grandeur of Michel Angelo was deemed more forcible but too severe. He therefore tried to erect a third style possessing greater strength and energy than the former, and more suavity and grace than the latter. In this futile attempt he was, notwithstanding his great talents, the undoubted instrument of hastening the decline of sculpture, by introducing a false and flattering taste, and confirming the tendency to an overloaded and elaborate style. Bernini was master of the works to several popes in succession, and means were thus afforded him of diffusing his peculiar views. Some of his most remarkable works may be briefly noticed. The monuments of Urban VIII. and Alexander VII. are splendid examples of his talents, though exhibiting fully the influence of the false taste we have alluded to. That of Alexander, in particular, is beautifully executed, but strangely composed. The figure of the pope appears seated in the centre of a deep niche, and all around him is distributed, as a ground-work to the whole, a mass of cloud and curtain, in the four corners of which are plunged allegorical groups of figures. Those in the background are inconspicuous, but the front corners are occupied by Truth and Charity: the latter with her infants is a remarkable instance of the power of the artist to give an unyielding material the semblance of elasticity, the softness and roundness of human flesh. The Apollo and Daphne by Bernini in the Villa Borghese is a very meritorious performance, displaying great skill in execution. A statue of David preparing to throw the stone is full of energy and fine expression; it was an early performance, and forms a portrait of the artist himself. Four colossal statues representing Four Doctors of the Church supporting the chair of St. Peter, in the church of that apostle, are finely imagined, but injured by want of simple expression and attitude.

ANTIQUE HEAD; IN THE BRITISH MUSEUM.

Contemporary with Bernini were Algardi and Flammingo. They were to a certain degree copyists of Bernini, yet both have some claim to originality. The former is celebrated for having produced the largest, though not the best relievo of modern art. It represents the discomfiture of Attila by the miraculous appearance of St. Peter and St. Paul. The work is executed in marble, in five pieces, and measures about thirty feet in height, and eighteen in width. Flammingo at first contented himself with imitations of the style of Bernini; but subsequently copied from nature, and became eminent for his skill in representing the round and healthful forms of very young children. Of some of these representations Rubens is reported to have said, "Nature rather than art appears to have sculptured; the marble seems softened into life."

After Bernini, who died in 1680, Camilla Rusconi, a Milanese, was esteemed the master sculptor of Italy. He

followed the same principles as his predecessor, but his talents were much inferior, and the deterioration of taste became yet more rapid in his hands, while external circumstances also contributed to the fall of sculpture.

It would be superfluous to name the artists, who being either contemporaries with or successors to Rusconi continued with more or less of ability to carry out the same views, in this declining period of the art. Through nearly a century, from the death of Bernini to the appearance of Canova, there is not occasion to pause over the works of a single artist, except to mourn the bad taste by which his talent was warped and misapplied.

"Art has never been reformed," says Memes, "after a lapse from high eminence, by mere imitations of example however excellent, nor by only following rules for the correction of error. Some mind of uncommon firmness and good sense is required, who beginning with nature brings to the work of reformation original powers and severe judgment; fancy and feeling, with correctness and cultivated taste: one, in short, of those rare minds whose merits, great in themselves, become incomparably greater viewed with the times in which they commmenced their career; whose exertions, wonderful in their own accomplishments, are yet more admirable from the progress which others have thereby been able to effect. Such a genius was that possessed by Canova, a name venerable alike for virtue and for talents." For a description of the most celebrated works of this great artist we beg to refer our readers to three articles, entitled *Canova and his Works*, in Vol. XVIII. pp. 18, 50, and 66 of this Magazine. Whether we consider the multiplicity of his labours, the elegance and purity of his taste, the fertility of his genius, or the correctness of his judgment, we must acknowledge Canova to have been a most extraordinary artist, eminently calculated to be the restorer of Italian sculpture from the state of degradation into which it had fallen, and to establish improvement upon genuine and universal principles of art.

The genius of Canova gave a new and general impulse to sculpture. Thorwaldsen, born at Copenhagen, in 1772, is classed among Italian artists, and considered the head of the modern school. The genius of this sculptor is forcible, but its energy is rather owing to peculiar views, than arising from real excellence. His principal works are the Triumph of Alexander, two exquisite pieces of Night and Aurora, and his Mercury—an example of the beauties and defects of the artist's style. His bellevos are remarkably fine. That of Alexander's Triumph has been called, notwithstanding some minor defects, one of the grandest compositions in the world. The character of Thorwaldsen as a sculptor has been thus summed up: "Thorwaldsen possesses singular, but in some respects, erratic genius. His ideas of composition are irregular; his powers of fancy surpass those of execution: his conceptions seem to lose a portion of their value and freshness in the act of realizement. As an individual artist he will command deservedly a high rank among the names that shall go down to posterity. As a sculptor, who will influence or has extended the principles of art, his pretensions are not great; or should this influence and these claims not be thus limited, the standard of genuine and universal excellence must be depreciated in a like degree." There are other names which might be worthily associatad with that of Thorwaldsen, but as it is not requisite to dwell on the history of living artists in a brief sketch like this, we close our history of Italian art, and proceed to that of other countries.

Section VI. British Sculpture.

The knowledge of sculpture introduced into England by the Romans at the time of their subjugation of this country appears to have been very rude and imperfect, and the specimens which can be referred to that early date, are so badly executed, as to lead to the supposition that they were the work of the common soldiers, rather than of the artists of Rome. During their sway in Britain, however, some taste for works of art was excited among the conquered people. Flaxman, quoting the language of Speed, says that King Cadwallo being buried in St. Martin's Church, near Ludgate, his image, great and terrible, triumphantly riding on horseback, artificially cast in brass, was placed on the western gate of the city, &c. The death of Cadwallo is placed at A.D. 677. After the final evacuation of the country by the Romans, the attempt to imitate the human form was little practised, and throughout the dominion of their successors, the Saxons, we find the art in a feeble state, and rudely displayed. From the time of the Norman invasion, we trace the introduction of a better style of art, still farther improved and modified in the time of the Crusades, when foreign travel had enlightened the minds of multitudes in matters of taste, and spread abroad a knowledge and appreciation of Grecian statuary, which soon began to show itself in the improvement of English sculpture. Before the end of the eleventh century, there is no evidence of sepulchral statuary having been executed in England. This practice we may therefore conclude to have been introduced at the time of the Norman invasion. In the cloisters of Westminster Abbey are sculptured effigies carved in very low relief on coffin-shaped slabs, supposed to represent two abbots, Vitalis who died in 1087; and Crispinus who died in 1117. After the return of the Crusaders good sense and simple grace began to be apparent in works of art, and to redeem the imperfections which were still to be found in the workmanship. The number of ancient monuments executed during the early period of our history, and still adorning our old cathedrals and abbeys, is considerable; yet very little is known of their authors. It is probable that very many of our most beautiful architectural and sculptural works were performed by foreigners, members of those fraternities of itinerant artists of whom we have spoken in our Supplements on Architecture, and whose societies were composed of architects, sculptors, workers in mosaic, builders, designers; each strictly attending to his particular department, but under the common guidance of the general overseer. That this was really the case seems nearly proved by the fact that the very improvements introduced by Giovanni da Pisa, son of Nicolo Pisano, are decidedly apparent in English works of that period. It is true that English names are recorded as the masters of the works in our most celebrated erections, but there is much reason to believe that many of these persons, whose names have been handed down to posterity in connection with particular undertakings, were the ecclesiastics, who laid their plans and communicated their wishes to the foreign artists, and by whose direction the buildings were commenced.

This state of things, far from being prejudicial to the development of native talent, was the means of fostering and assisting it, and we have every reason to conclude that in the very works we have been speaking of, numerous assistants must have been needed, and selected from among the English, to carry out the grand designs of those who had the principal charge of the work. It is little doubted but that some fine monuments of our Henries and Edwards during the fifteenth century, are the works of home-bred talent. It was the opinion of Flaxman that the greater part of the sculpture of Wells Cathedral, built by Bishop Joceline during the early part of the thirteenth century, was the work of native artists. Some of the statues exhibit much grace and simplicity. But the sculpture of the reign of Edward the First, and the statues of that monarch and his queen in Westminster Abbey, bear proof of their being the work of Italian artists. Under Edward the Third the art appears to have been much cultivated by Englishmen, and various interesting works exhibit their skill. The name of William Austin is honourably recorded as the author of Beauchamp, Earl of Warwick's monument in the Warwick chapel. It is well known that two Italian sculptors were much employed in England during the sixteenth century, *i.e.*, Cavallini and the celebrated Torregiano, who executed the monument in Henry the Seventh's Chapel, at the price of one thousand pounds. John of Padua, a pupil of Michel Angelo, was master of works to Henry the Eighth. The monuments of this period to which English names are attached, do not exhibit even a tolerable degree of skill. Indeed, from the time of Henry the Eighth to Charles the First, the art of sculpture fell into much neglect; during the eventful period, and amidst the struggles, which preceded the establishment of the Reformed religion, it frequently happened that party feeling and mistaken zeal led to the mutilation or total destruction of the choicest specimens of art. Under these circumstances, there was little encouragement to the sculptor to continue his vocation. Charles the First was much inclined to encourage the arts. It was by his order that the cartoons of Raphael, and other splendid works, were made the property of this country. English sculptors flourished in that reign, and though the style and composition of their works are of a very low order, there is occasionally a boldness of conception which renders them worthy of notice.

All the sculptors of talent who flourished in England during the last century were foreigners, though some of them by long residence among us earned a British fame.

The principal works were executed by Gibbon, Cibber, Steevens, De Vere, Bertocini, Sheemacker, Roubiliac. This variety of sculptors, from different countries, brought a variety of taste and style, but very little of sound principle in art.

The school of British sculpture, properly so called, may be considered as commencing with Banks, who was born in 1738, and died in 1805. "He was the first of our native sculptors," says Cunningham, "whose aims were uniformly lofty and heroic, and who desired to bring poetry to the aid of his compositions." His finest work was his Mourning Achilles, and the anecdote which accompanies the notice of it by the memorialist above named, is too characteristic to be withheld. When the statue was completed, praise was poured upon the artist from all quarters; some loved it because it was classic, others because it was natural, and more because the sentiment of sorrow was largely diffused from the face over the figure. He was justly proud of this noble work, and proceeded to remove it to the exhibition rooms in Somerset House. The packing and removing of sculpture is at all times attended with danger, and so it proved in this instance, for the wagon was overturned in the street, and the Mourning Achilles shivered into five hundred pieces. Banks, who accompanied the carriage, witnessed the destruction of his figure—the work of a whole twelvemonth was lost in one moment, and as he depended upon it for the establishment of his name, all hopes of future celebrity for the moment vanished. He returned home, and such was his command of temper,—his philosophic, or, more properly, devout resignation under this calamity,—that neither his wife nor daughter observed that anything unfortunate had happened. He returned to the exhibition room, collected the scattered fragments of his work, and assisted by his younger brother, pieced it patiently and skilfully together, and restored the Mourning Achilles to something like its original beauty. He then communicated what had happened to his wife.

Bacon, born in 1740, was in every respect an English artist, and almost self-taught. His statue of Samuel Johnson, in St. Paul's cathedral, is greatly admired for its fine and truthful expression. In the same building is another example of his talent, in the statue of the benevolent and philanthropic Howard. Contemporary with these two artists was Nollekens, "who," says Memes, "knew his *art*, but wanted *science*, dignity, and fancy."

We now come to the most eminent sculptor this country has yet produced,—the celebrated John Flaxman, born in 1755. This artist and his works have been recently noticed at some length in the pages of the *Saturday Magazine*: we shall therefore content ourselves with adding the opinions of Sir Thomas Lawrence and of Count Cicognara respecting his merits. The former speaks thus: "The elements of his style were founded in Grecian art, on its noble principles—on its deeper intellectual power, and not on the mere surface of its skill. Though master of its purest lines, he was still more the sculptor of sentiment than of form; and whilst the philosopher, the statesman, and the hero were treated by him with appropriate dignity, not even in Raphael have the gentler feelings and sorrows of human nature been treated with more touching pathos than in the various degrees and models of this inestimable man. Like the greatest of modern painters, he delighted to trace from the actions of familiar life the lines of sentiment and passion, and from the populous haunts and momentary peacefulness of poverty and want, to form his inestimable groups of childhood and maternal tenderness, with those noble compositions from Holy Writ, as beneficent in their motive as they were novel in their design." Count Cicognara thus testifies to the opinion the Italians entertained of our renowned countryman: "To Flaxman our obligations are very great, since, as far as our acquaintance with his works extends, they serve nobly to elevate from a certain monotonous lethargy, and to create afresh that taste for the severe and golden style of antiquity which he applied to his own inventions."

At the present day our country may boast of sculptors of superior talents, and from the beautiful specimens of art which have appeared during the last few years, we may confidently anticipate a high degree of excellence to be attained in this art. A just taste is every day becoming more widely diffused, and liberality of patronage is giving a powerful stimulus to the exertions of our sculptors. An important step towards this desirable state of things was taken at the early part of this century by the purchase of some of the most celebrated works of ancient art, and their public exhibition in our National Museum. Since the works of the celebrated Phidias have been thus brought before us, every department of taste has been improved, sculpture in particular. And thus may it long continue to be with this most pleasing art. It has been well remarked that, "Sculpture seems especially calculated to flourish amongst us. The grave and manly character of the art agrees with the tone of national genius, harmonizes with our free institutions, and may find in our history sources of the brightest inspiration."

A few of the more striking proofs of British talent, as exhibited in our public monuments, may here receive a brief notice. The colossal equestrian statue in brass of George III. placed at the extremity of that noble avenue called the Long Walk in Windsor Park, presents an admirable likeness of the sovereign. It is twenty-six feet in height, and with its pedestal (which is a mass of stones intended to represent a rock), reaches an elevation of fifty feet. The eminent sculptor (Mr. Westmacott) to whom the public is indebted for this fine performance, has not escaped censure, as it respects the drapery of the figure; for those who so well remember their beloved Sovereign, attired in a plain English dress, are naturally surprised and offended at the Roman costume in which he is represented. It has been justly said that a false idea will be conveyed to future generations respecting the style of dress in England during the nineteenth century, for owing to the almost imperishable nature of the material, this statue will probably exist for thousands of years. The apparent height of this statue is greatly diminished by the lofty proportions of the trees by which it is immediately surrounded.

Foremost in the list of metropolitan monuments must be placed the statue of the Duke of York erected at the principal entrance to St. James's Park. The figure is thirteen feet nine inches in height, and stands on a beautiful Doric column, one hundred and twenty-four feet high. The duke is represented in modern costume, with a cuirass and military boots. His right hand rests upon a sword, eight feet in height, and across his left shoulder is thrown an ample mantle emblazoned with the order of the Garter.

The colossal statue in bronze, erected in Hanover Square to the memory of William Pitt, is, in many respects the finest in London. Mr. Chantry has represented the orator in the act of addressing an audience.

Another celebrated public testimony, of which the last named admirable sculptor was the author, is the marble statue of Watt, in Westminster Abbey. Nothing could more faithfully express the character of the philosopher than this exquisite composition, breathing in its simplicity and repose, the calm and reflecting mind of the extraordinary man it is designed to commemorate.

The commemoration of individual excellence and public worth seems the principal sphere at present for the statuary in England. "The features of the wise man," says Milman, "and the figure of the warrior, cannot be too distinct and determinate; and though more imaginary subjects fail him, the English sculptor cannot want matter for his skill, till the line of English heroes and English sages is extinct. Modern sculptors have often attempted to substitute allegory for mythology; but, besides the difficulty of distinguishing these beings by their attributes, there is this strong objection:—we cannot, by any effort, believe their actual existence, or forget that they cannot exist; that they are but philosophical symbols. The Grecian divinities required an abstract exercise of the imagination to credit their existence in their beauty and majesty; but there was no obtrusive impossibility, nothing that positively contradicted their reality of being. But though Minerva, and Mars, and Apollo, are obsolete to our feelings, and unenlivening to our imagination, yet for representations of embodied wisdom, and valour, and poetry, our memory would gladly cleave to particular images. The statue of Newton, with its deep concentration of thought and undisturbed retirement within itself, may stand a strong and vivid emblem of philosophy. Why should the dying figure of Wolfe or Nelson be confined to the canvas? The satisfied serenity of the expiring conqueror should be wrought in durable marble. And in Milton 'sleeping under the Italian shade,' in his youthful beauty, the calm and holy inspiration of poetry might be moulded and wrought in all its fulness and perfection."

Section VII.

French, German, and Spanish Sculpture.

We cannot close our remarks on sculpture without briefly adverting to that of the nations above mentioned,

although we find little to attract attention in the works of their native artists. As in the case of the early history of our own country, so many of the best works were executed by Italian sculptors, that the art can scarcely be said to have had an existence apart from their labours. Nevertheless French sculptors of some eminence are spoken of as early as the middle of the sixteenth century. Jean Gougon completed the celebrated Fountain of the Innocents in 1550. His contemporary, Jean Cousin, also possessed talent, but his works, though not without grace, are deficient in strength and correctness. German Pilon is spoken of as a master whose productions are full of energy, but wanting in simple and natural expression. Jacques d'Angouleme was contemporary with Michel Angelo, and the national vanity has shown itself in the statement that he once defeated that great master in a trial of skill. Giovanni di Bologna we have already named. He filled the whole of France with the principles of his former master, down to the time of Louis the Fourteenth. At this time excessive refinement of decoration prevailed, and the tendency to minuteness of execution, and flutter in composition and design, which had characterized French sculpture almost from the sixteenth century, was at its height. Girardon and Puget were the celebrated artists of this period; the former possessed great merit, though not sufficient to justify the language of Voltaire, "*il a égalé tout ce que l'antiquité a de plus beau.*" Puget, the favourite of his country, is energetic in composition, bold and full of movement in his method of handling, but is deficient in nobleness, grace, and science. Sarasin is spoken highly of as the author of the Caryatides at the Louvre. The succeeding artists followed the steps of Girardon and Puget, until the excesses of the unhappy period of the Revolution put an end, for the time, to the arts of peace, and proved destructive to the treasures of antiquity. One of the last statues executed previous to this dreadful outbreaking was that of Voltaire by Pigal, which called forth the following severely just epigram:

> Pigal au naturel represente Voltaire—
> Le squelette à la fois offre l'homme et l'auteur,
> L'œil qui le voit sans parure etrangère
> Est effrayé de sa maigreur!

Germany appears to have made little progress in sculpture prior to the seventeenth century. The bronze statues surrounding the tomb of the Emperor Maximilian at Innspruck are indeed attributed to Laffler or Loffler, who died in 1565; but they are more frequently assigned to two brothers of the name of Godi, probably Italians. Ranchmuller preceded Shluter of Hamburg, who visited Rome, and attached himself to the manner of Michel Angelo. Some finely executed pieces of sculpture in Vienna were the work of Messerschmidt. In later times Ohnmacht, Sonneschein, Nahl, and the two Shadofs have highly distinguished themselves. The Spinning Girl of the younger Shadof is esteemed one of the most exquisite imitations of nature which modern art can show. Still Germany is more celebrated for writers on the philosophy of sculpture than for artists who have attained eminence in the practice of the art.

Spanish historians give a long list of native sculptors from the beginning of the sixteenth century. The greater part of them appear to have been employed in ornamenting the churches of Spain, and are little known beyond their own country. Berruguete, a pupil of Michel Angelo, appears to have founded the first regular school of sculpture. He adorned Madrid, Saragossa, and other towns, with works that exhibit much of the grandeur and expression of ancient art. Paul de Cespides was celebrated as a sculptor of great merit, and in the eighteenth century Philip de Castro contributed greatly to raise the art and to diffuse true principles and correct taste, in Spain.

In conclusion we may quote the remarks of Mr. Grattan on the advantages expected by the ancients from the well-directed exercise of sculpture. "The history of Greece might be studied in the street, as well as in the closet. The very ornaments of their houses were pregnant with utility, and while they entertained the eye, informed the judgment, and transmitted shining examples to the latest posterity. So prevalent and uniform were the effects expected from these sculptured monitors among the Romans, that their satirists and orators instanced the frequent neglect of them as a mark of aggravated degeneracy. Their bold figures and glowing descriptions represented the venerable statues as animated with shame and anger at the corruption of their race, painted them as domestic and ever-present accusers. With a stern and indignant silence they conjured them, by those precious monuments, no longer to let their excesses tarnish their hereditary honours, or wound the peace of those illustrious shades by whose sufferings and virtue those honours were purchased and acquired. Such great advantages did the ancients both expect and derive from a well-directed exercise of sculpture; nor have we reason, even in these days, to suspect that its operation should vary, or its influence on the genius of a people be sensibly diminished.

"Britain has ever warmly and abundantly discharged the debt of gratitude to her deceased benefactors: but let her now go farther: she should begin to reap, in the certain encouragement of public virtue, the fruits of that laborious perfection to which her patient ingenuity has raised the arts."

TERMINAL HEAD OF THE BEARDED BACCHUS.
(In the British Museum.)

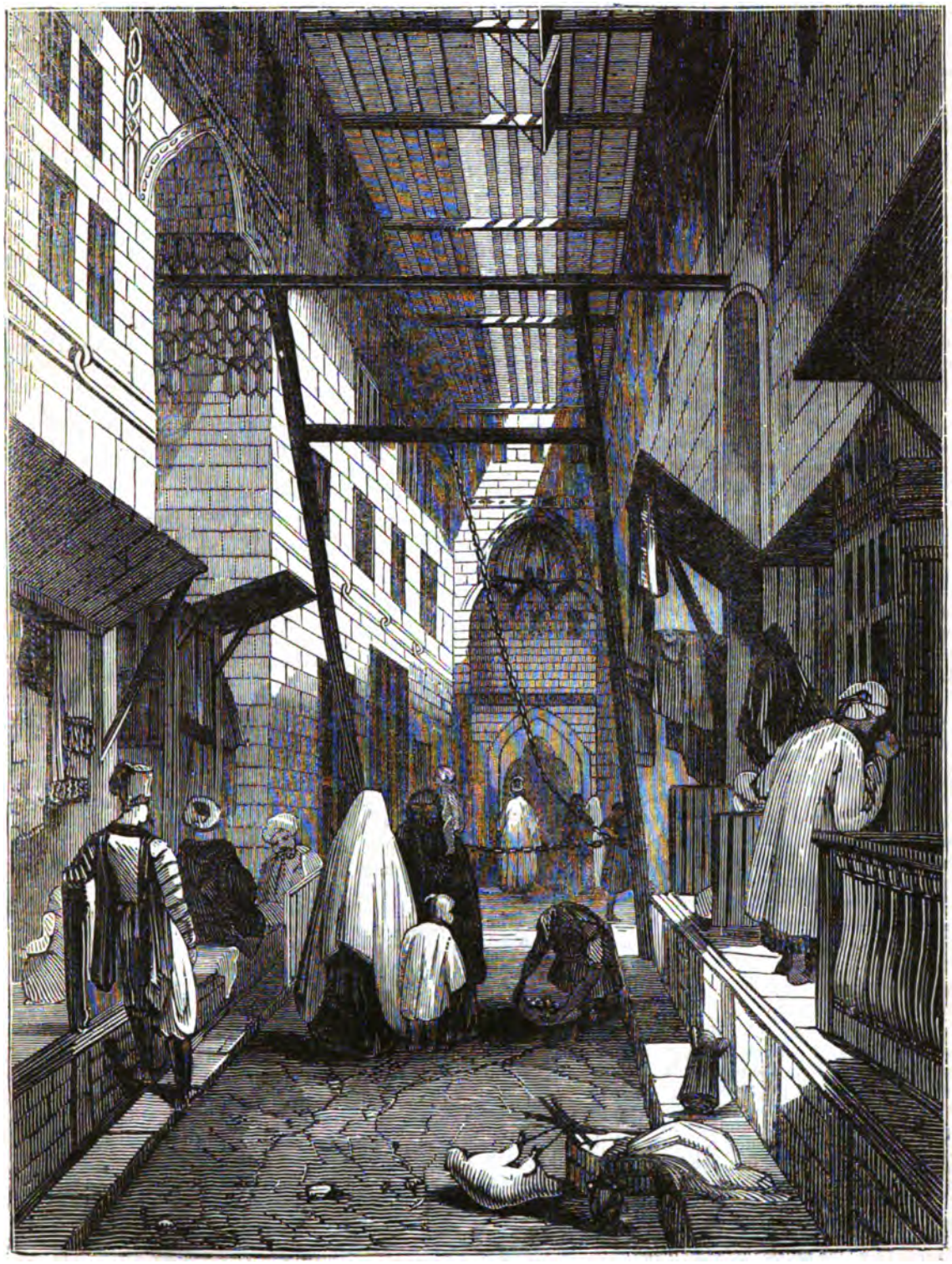
LONDON, Published by JOHN W. PARKER, West Strand, and sold by all Booksellers.

THE

Saturday Magazine.

Nº. 594. OCTOBER 2ND, 1841. { PRICE ONE PENNY.

SKETCHES OF CAIRO. IV.



KHAN-EL-KHALEELEE, CAIRO

SKETCHES OF CAIRO. No. IV.

The district commonly known as the Khan el-Khaleelee comprehends within it several large khans, or wekalehs; but it is properly confined to a much smaller space within the immediate neighbourhood of the khan represented in our frontispiece. It was founded about A. H. 690. (A. D. 1291,) by a person named Khaleel. This wekaleh is a favourite resort of the Turks, and natives of the higher orders. Its shops are principally occupied by the dealers in silks, shawls, and ready-made clothes; and on public market days, it is nearly impassable from the busy throng. Mr. Hay has not represented it on such an occasion, and on that account this view exhibits the buildings to greater advantage. It is lofty and covered in, so as to exclude the ardent rays of the sun and yet admit sufficient light.

Mr. Lane describes a wekaleh as a building surrounding a square or oblong court. Its ground floor consists of vaulted magasines, for merchandize, which face the court; and these magasines are sometimes used as shops. Above them are generally lodgings, which are entered from a gallery extending along each of the four sides of the court; or, in the place of these lodgings, there are other magasines, and in many wekalehs which have apartments intended as lodgings, these apartments are used as magazines. In general, a wekaleh has only one common entrance, the door of which is closed at night, and kept by a porter. There are about two hundred of these buildings in Cairo, and three-fourths of that number are within that part which constituted the original city.

It is common in Cairo for a portion of a street or a whole street to contain shops appropriated to one particular trade; and this is called the sooch or market of that trade, or is named after a neighbouring mosque.

The shop is a square recess or cell, generally about six or seven feet high, and between three and four feet wide. Its floor is even with the raised seat of stone or brick, built against the front. The shop is furnished with folding shutters, commonly consisting of three leaves, one above another; the uppermost of these is turned up in front, the other two leaves, sometimes folded together, are turned down upon the raised seat, upon which is spread a mat or carpet, and sometimes a cushion or two is added. There the shopkeeper generally sits, unless obliged to retire a little way within his shop, to make room for two or more customers, who mount up on the seat, taking off their shoes before they draw up their feet upon the mat or carpet. To a regular customer, or one who makes any considerable purchase, the shop-keeper generally presents a pipe, and sends to the nearest coffee-shop for coffee, which is served in small china cups placed within cups of brass. Not more than two persons can sit conveniently upon the raised seat of the shop, unless it be more than usually spacious. On this seat the shopman usually says his prayers, in sight of the passengers in the street. When he leaves his shop for a short time he relies for the protection of his property upon the next shop-keepers, or hangs up a net. He seldom closes and locks the shutters, except at night when he returns to his house, or when he goes to the mosque on Friday.

Buying and selling (says Mr. Lane), are here very tiresome processes to persons unaccustomed to such modes of bargaining. When a shop-keeper is asked the price of any of his goods, he generally demands more than he expects to receive: the customer declares the price exorbitant, and offers about half, or two-thirds, of the sum first named: the price thus bidden is of course rejected; but the shop-keeper lowers his demand; and then the customer, in his turn, bids somewhat higher than before: thus they usually go on until they meet about half-way between the sum first demanded and that first offered; and so the bargain is concluded. When a person would make any but a trifling purchase, having found the article that exactly suits him, he generally makes up his mind for a long altercation: he mounts upon the mustubah (raised seat) of the shop: seats himself at his ease; fills and lights his pipe; and then the contest of words commences, and lasts often half an hour, or even more. Sometimes the shop-keeper or the customer interrupts the bargaining by introducing some irrelevant topic of conversation; as if the one had determined to abate his demand no further, or the other to bid no higher: then again the haggling is continued. The bargain being concluded, and the purchaser having taken his leave, his servant generally receives, from the tradesman, a small present of money, which if not given spontaneously, he scruples not to demand. Among the lower orders, a bargain of the most trifling nature is often made with a great deal of vehemence of voice and gesture: a person ignorant of their language would imagine that the parties engaged in it were quarrelling and highly enraged. The peasants will often say, when a person asks the price of any thing which they have for sale, "Receive it as a present*;" this answer having become a common form of speech, they know that advantage will not be taken of it: and when desired again to name the price, they will do so: but generally name a sum that is exorbitant."

In addition to the numerous shops for the supply of the necessaries and luxuries of life a variety of articles are hawked about the streets for sale. Some of the street cries are very curious. The seller of *tirmis* or lupins sometimes cries, "Aid! O Imbabee! Aid!" This is understood in two ways: as an invocation for aid to the Sheykh El-Imbabee, a celebrated Mooslim saint, buried at the village of Imbabeh, on the west bank of the Nile, opposite Cairo, in the neighbourhood of which village the best tirmis is grown: and secondly as implying that it is through the aid of the saint that the tirmis of Imbabeh is so excellent. Sometimes the hawker cries, "The tirmis of Imbabeh surpasses the almond!" Also, "O how sweet are the little children of the river!" This last cry alludes to the mode in which the tirmis is prepared for food. To deprive it of its natural bitterness it is soaked for two or three days in a vessel full of water; then boiled; and after this sewed up in a basket full of palm-leaves, and thrown into the Nile, where it is left to soak again two or three days; after which it is dried and eaten cold, with a little salt. The seller of sour limes cries, "God make them light [or easy of sale]! O limes!" The toasted pips of a kind of melon, and of the water melon, are often announced by the cry of "O consoler of the embarrassed! O pips!" A seller of a sweetmeat composed of treacle fried with other ingredients is, "For a nail! O sweetmeat!" Children and servants often exchange iron nails and other articles of iron for these sweetmeats, and hence the cry. The hawker of oranges cries, "Ilmey! O oranges! ilmey!" and similar cries are used by the venders of other fruits and vegetables; so that it is sometimes impossible to guess what article is really announced for sale; except that the least excellent of the fruits mentioned in the cry is often the only fruit the man has to sell; thus, when a man cries "Sycamore figs! O grapes!" he has figs alone for sale, and these are not so good as grapes. The seller of roses utters a singular cry; "The rose was a thorn: from the sweat of the Prophet it opened its flowers." This alludes to a miracle related of the Prophet. The fragrant flowers of the hhenna tree (or Egyptian privet), are thus announced for sale: "Odours of paradise! O flowers of the hhenna!" A kind of cotton cloth, made by machinery, which is set in motion by a bull, is announced as "The work of the bull! O maidens!"

As the water of the wells in Cairo is somewhat brackish, numerous *sackkas* (water-carriers) obtain a livelihood by supplying the inhabitants with water from the Nile. During the season of the inundation, the sackkas draw their water from a canal which runs through the city; but at other times it is brought up from the river in skins by camels and asses, or by the water-crrrier himself. The water-skins of the camel are a pair of wide bags of ox-hide. The ass bears a goat-skin: so also does the sackka, if he have no ass. His cry is

* "As Ephron did to Abraham, when the latter expressed his wish to purchase the cave and field of Machpelah." See Genesis xxiii. 11.

"O! may God compensate me!" For a goat's skin of water brought from a distance of a mile and a half or two miles he obtains scarcely more than a penny. Many sackckas supply passengers in the streets with water. The water-skin of one of these carriers is provided with a long brass spout; and he pours the water into a brass cup, or an earthen vessel, for any one who would drink. Another set of water-carriers called hhemalees carry on their backs a vessel of porous grey earth. This serves to cool the water. Sometimes the water is scented with orange flowers, and often a sprig of naring is stuck in the mouth of his water-vessel. Other persons perambulate the streets with infusions of liquorice, sherbet, and other drinks for sale.

We have purposely abstained from any notice of the political condition of the Mooslims, because many changes have already taken place or are still in progress, so that any details which we could give would apply rather to the past than to the present. We will therefore conclude thse sketches with a few detached notices of the domestic manners of the Mooslim Egyptians.

The Mooslims are formal and regular in their social manners; though generally very easy in their demeanour and free in conversation. Many of their commonest usages are founded on the precepts of their religion, such as the common salutation of "Peace be on you!" the reply to which is, "On you be peace, and the mercy of God, and his blessings!" This salutation is never addressed by a Mooslim to a person of another religion, nor *vice versâ*. Mr. Lane says that a European traveller not disguised by Turkish dress, often fancies that he is greeted with this salutation when it is really intended for his Mooslim attendant. When friends salute each other they join their right hands, and then each kisses his own hand, and puts it to his lips and forehead, or his forehead only, or his breast; or merely places it on his breast without kissing it. It is a customary mark of respect to conceal the hands in the sleeves of the ckooftan in the presence of a person of high rank. In polite society, when a person asks his friend, "How is your health?" the reply is, "Praise be to God!" and it is only by the tone of a voice in which the answer is made that the inquirer can infer whether his friend be well or ill. The ordinary compliments in use in Egyptian society are extremely numerous.

When a person visits the house of another he never enters unawares; and particularly if he have to ascend to an upper apartment he calls out for permission, or claps his hands, in order that the females of the house being warned of his approach may retire or veil themselves. On entering the room where the master of the house is seated, he gives the selam, which the master returns, and welcomes his guest with affability. To his superiors or equals he rises; and to the former and often to the latter he yields the most honourable place, which is the corner of the deewan. The upper end of the room is called the *sudr*, and the seat extending along it is more honourable than those at the sides. Visitors of inferior rank to the master never seat themselves at the upper end unless invited to do so, and then they often decline the honour. During the visit smoking is nearly always carried, on and coffee introduced; for, say the Arabs, "tobacco without coffee is like meat without salt."

It was once common in the houses of the rich to sprinkle the guest before he rose to take his leave with rose or orange-flower water, and to perfume him with the smoke of some odoriferous substance; but of late years this custom has declined. The Egyptians are very fond of perfumes, and often fumigate their apartments. It is also common to fumigate the cups from which they drink their coffee with the smoke of mastic; and wealthy persons sometimes impregnate the coffee itself with the fragrance of ambergris.

Mr. Lane describes the Egyptians as being extremely courteous to each other, with a peculiar grace and dignity in their manner of salutation and their general demeanour, combined with easiness of address, which seems natural to them; and is observable even in the peasants. The middle and higher classes of townspeople pride themselves upon their politeness and elegance of manners, and their wit and fluency of speech. Affability is a general characteristic of the Egyptians of all classes. It is common for strangers even in a shop, after mutual salutation, to enter into conversation with each other with as much freedom as if they were old acquaintances; and for one who has a pipe to offer it to another who has none; and it is not unusual, nor unpolite, for strangers to ask each other's names, professions and places of abode. They are generally very lively in their talk; but seldom noisy in their mirth; anything which pleases them being generally acknowledged by a smile or an exclamation.

But of the leading features of their character none is more remarkable than their religious pride. They regard persons of every other faith as the children of perdition; and such the Mooslim is early taught to despise. Falsehood was commended by their prophet, when it tended to obtain any advantage over the enemies of their faith; and hence, veracity is a virtue extremely rare in Modern Egypt; for, as Mr. Lane well observes, if people are allowed to lie in certain cases, they insensibly contract a habit of doing so in others. The Mooslims are also grossly superstitious; they have full faith in written charms and amulets, and in the influence of magic, and resort to the most absurd and ridiculous practices to protect themselves from enchantment, the evil eye, &c. They are moreover very indolent, obstinate, sensual, and often rapacious.

One pleasing feature in their characters is the humanity with which they treat the lower animals. Dogs are very numerous in Cairo, and although regarded as unclean, they are not only unmolested, but their wants are daily provided for. Small troughs are daily replenished with water for the dogs. In each street where there are shops, a sackcka is paid a small sum monthly, for sprinkling the street and filling the dogs' trough in that street. The dogs are of use in removing the offal thrown out from the butchers' shops and from houses. They generally avoid coming in contact with the men; as if they had an instinctive feeling that the people of the city regarded them as unclean. It is curious, also, that houseless cats in Cairo are fed at the expense of the ckadee; every afternoon a quantity of offal is brought into the great court before the Mahhakemeh, and the cats are allowed to eat. Many persons, when they want to get rid of a cat, send it to the ckadee's house, and let it loose in the great court.

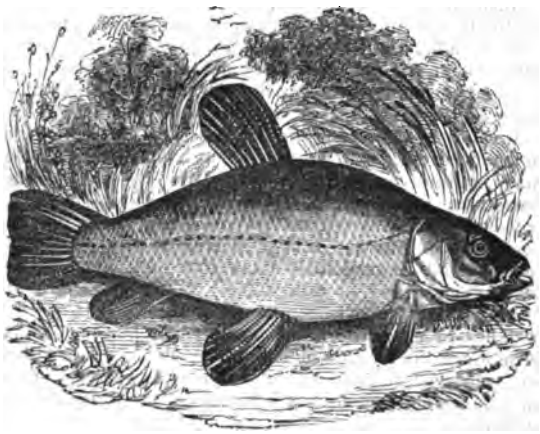
In conclusion, we may mention another prevailing characteristic of the modern Egyptians, which is, love of their country. In general they have a great dread of quitting their native land; and many who had determined to visit a foreign country for the sake of considerable prospective advantages, found their resolution give way as the time of their intended departure drew near.

It is an uncouth, a strange thing, and even unnatural, that neither a man's appetite, nor his health, nor the time of the day, nor his ordinary diet, shall be the reason or occasion of a man's drinking, or the rule whereby to try the convenient *when* or season of it; but whenever a man shall make such and such a bargain with me, or pay me for, or get payment from me of such and such thing, *that* must be the rule of my eating and drinking. What beast would be thus dealt with? There is a drinking of healths—by this means forcing, tempting, or occasioning drinking in others: this is one of the highest provocations to drunkenness. What can be the use of drinking healths? It was a notable saying of a great man, solicited to drink the king's health, "By your leave I will *pray* for the king's health and *drink* my own." This practice will probably be found to have arisen from heathen idolaters, who used libations to Jove, Bacchus, &c.: it is certain there is no vestige for it in Christianity, nor any reason for it.—DURHAM.

FRESH-WATER FISH.

VIII.

THE TENCH (*Cyprinus Tinca.*—LINN.)



The Pike, fell tyrant of the liquid plain,
With ravenous waste devours his fellow train;
Yet howsoe'er he be with famine pined
The TENCH he spares, a medicinal kind;
For when by wounds distressed, or sore disease,
He courts the salutary fish for ease.
Close to his scales the kind physician glides,
And sweats a healing balsam from his sides.

THE above lines, extracted from the piscatory eclogues of Mr. Diaper, express an old and very remarkable superstitition, which Walton relates with amusing simplicity. After introducing the Tench as the "physician of fishes," he says:—

In every tench's head there are two little stones, which foreign physicians make great use of, but he is not commended for wholesome meat, though there be very much use made of them for outward applications. Rondeletius says, that at his being at Rome, he saw a great cure done by applying a tench to the feet of a very sick man. This, he says, was done after an unusual manner by certain Jews. And it is observed that many of those people have many secrets yet unknown to Christians; secrets that have never yet been written, but have been, (since the days of their Solomon, who knew the nature of all things, even from the cedar to the shrub,) delivered by tradition, from the father to the son, and so from generation to generation, without writing; or (unless it were casually), without the least communicating them to any other nation or tribe; for to do that they account a profanation. And, yet, it is thought that they, or some spirit worse than they, first told us that certain insects swallowed alive were a certain cure for the yellow jaundice. This, and many other medicines, were discovered by them, or by revelation; for, doubtless, we attained them not by study.

Well, this fish, besides his eating, is very useful, both dead and alive, for the good of mankind. But I will meddle no more with that, my honest humble art teaches no such boldness: there are too many foolish meddlers in physic and divinity, that think themselves fit to meddle with hidden secrets, and so bring destruction to their followers. But I'll not meddle with *them*, any farther than to wish them wiser; and shall tell you next (for I hope I may be so bold) that the tench is the *physician of fishes*, for the pike especially; and that the pike, being either sick or hurt, is cured by the touch of the tench. And it is observed that the tyrant pike will not be a wolf to his physician, but forbears to devour him though he be never so hungry.

This fish, that carries a natural balsam in him to cure both himself and others, loves yet to feed in very foul water, and amongst weeds. And yet, I am sure, he eats pleasantly, and, doubtless, you will think so too, if you taste him.

The remarks of modern observers seem to show that while we must dismiss as fabulous the wonderful healing qualities of the tench towards their fellow fishes, yet the surprising fact seems well ascertained, that the tench, from whatever cause, is secure from the attacks of the pike, the eel, and all other predatory fresh-water fish. Mr. Daniel and Mr. Salter state the fact in plain and unqualified terms:—

Whether the forbearance of the pike (says the latter gentleman) arises from respect to the healing qualities of the tench, or is to be attributed to a dislike of the slimy matter on its body, I know not; but I believe the tench is perfectly free from the persecution of the jack and pike, for I have never taken one that has been at all mutilated in its fins, tail, or any other part, or with any of those wounds or scars on the body which are so frequently met with by the angler among the small fish he takes: the eel also foregoes his voracity in regard to the tench, both by night and day. I have known several trimmers to be laid at night baited with live fish, roach, dace, bleak, and tench, each about six or seven inches long, and when those trimmers were examined in the morning, both eels and jack have been taken by the hooks baited with any other fish but the tench, which I found as lively as when put in the river the preceding night, without ever having been disturbed: this has been invariably the case during my experience; neither have I met with even one solitary instance to the contrary related by any of my acquaintance, who had numerous opportunities of noticing the singular circumstances of the perfect freedom from any hostile attack which the tench enjoys over every other inhabitant of the liquid element, arising from the continual conflicts among each other.

The tench seems to have been introduced into England from the lakes of Southern Europe. It is also found in other parts of the world. It inhabits either stagnant waters or a loamy clayey soil which forms a soft muddy bottom; or the most tranquil rivers which flow over a muddy bed. Mr. Daniel has taken tench out of Munden Hall Fleet, in Essex, where the water was so foul, and the weeds so thick, that the flews could hardly be sunk through them; the mud was also intolerably fetid, and had dyed the fish of an inky colour, and yet the tench were well grown, and of fine flavour; many that were taken weighed nine or ten pounds the brace. Sometimes the flesh of the tench is so tainted by the rank weeds or impurities of the water in which it constantly dwells, that it cannot be eaten; if, however, the fish be conveyed to other purer water it loses the offensive taint in a few days.

This fish is known as the *mucous blackish olive carp*. Its form varies with its age, but Mr. Blaine states as a general type, that it is thick in proportion to its length as three to one; when very full and well fed, it has been seen nearly as broad as it is long. The head is full, but proportionate to the bulky figure; the snout short, blunt, and bounded by a moderately sized and rounded mouth. It has two insignificant cirri, one at each angle of the mouth. As to its teeth, the remark of Walton on the carp applies here; for the tench is "to be reckoned amongst those leather-mouthed fish, which, I told you, have their teeth in their throat; and for that reason he is very seldom lost by breaking his hold, if your hook be once stuck in his chaps." The eyes are small and round; and the iris red. The gill-covers are of a bright yellow: the fins and tail large, and of a dark purplish hue. The general colour of the fish is a deep olive, with a golden tint shining through the scales. The scales are small and thin, and adhere closely to the skin; their number has been computed at not less than thirty thousand. The fins of the female are said to be much longer than those of the male. The viscid slime with which the surface of the scales is thickly covered, together with its reputed healing qualities, we have already noticed.

These fish spawn at the end of spring or the beginning of summer; they form a nidus about the roots and stems of aquatic plants. The young fry appear in a short time, and grow quickly, and are soon ready to add to the numbers of their race; for the tench is even more prolific than the carp: four hundred thousand ova have been counted in a single roe. Like the carp, the tench will live long out of water, and may be carried in wet moss to a considerable distance.

Mr. Daniel informs us of a most remarkable tench, the unusual form and size of which are not easily accounted for. A piece of water at Thornville Royal, Yorkshire, which had been ordered to be filled up, and wherein wood, rubbish, &c., had been thrown for years, was in November, 1801, directed to be cleared out. Persons were accordingly employed, and almost choked up by weeds and mud, so little water remained, that no one expected to find any fish, except a few eels; and yet nearly two hundred brace of tench of all sizes, and as many perch, were found. After the pond was supposed to be quite free, under some roots there seemed to be an animal, which was conjectured to be an otter: the place was surrounded, and on opening an entrance among the roots, a tench was found of a most singular form, having literally assumed the shape of the hole in which he had been confined. His length from fork to eye was two feet nine inches; the circumference, almost to the tail, was two feet three inches; the weight eleven pounds nine ounces and a quarter; the colour was also singular, the belly being of a char, or vermilion. This extraordinary fish after having been inspected by many gentlemen, was carefully put into a pond; but either from confinement, age, or bulk, it at first merely floated, and at last with difficulty swam gently away. At the time Mr. Daniel wrote it was alive and well.

The tench is in season from May to the end of September; one of about five pounds weight often costs as many shillings in the London market. It was once so little valued as to be eaten only by poor people.

There are many apparently well authenticated instances of fishes preserving their vitality, even in a frozen state; and it is even said that in northern latitudes advantage is taken of this circumstance to transport eels and perch from one locality to another. This vitality, however, does not exist in all species inhabiting the same latitudes. Mr. Swainson, from personal observation, says—

Upon the breaking up of the long and severe frost of this winter (1837—8), we have had the mortification of seeing the dead bodies of between thirty and forty fine tench floating on the surface of a pond in the garden, into which three or four pair had been put four years ago. The pond is of rain-water, with a soft muddy bottom, which has a depth of from two to four feet, and is fringed with many aquatic plants. Abundant shelter was thus afforded for the fish; and yet there can be no doubt, we think, that they have all been killed by cold. The people about the place assert that this mortality would not have happened, had holes been broken in the ice for the admission of air: but were this absolutely necessary in all cases, it would follow that the tench of all such ponds as had not been opened would have been likewise killed.

It forms a striking contrast to the power which some fish undoubtedly have of preserving their vitality through very low degrees of temperature, to find that many of them can not only exist, but actually breed, in hot springs of various countries at temperatures varying from 80° to 120° Fahr. But the most startling fact is that recorded by Humboldt; he says that during his researches in tropical America, he found fish thrown up alive from the bottom of an exploding volcano, along with water so hot as to raise the thermometer to 210°, being two degrees only below boiling. Mr. Swainson judiciously remarks:—

Considering this excessive heat, it is, we think, too much to suppose that the water in which these fish habitually resided was always of such a temperature. It is a well-known fact, that springs in the vicinity of volcanoes are very often considerably heated *before* an eruption takes place; and until we are in possession of further evidence on this point, we believe that such was the case in the present instance: the internal fires, in all probability, had greatly heated the water previous to its having been expelled from its natural basin, before the increased heat had killed the fishes; a supposition much more probable, than that the fishes would live and sport in a fluid whose temperature would be sufficient to prepare them for the table.

COMMERCE OF LEECHES.

All our leeches are imported from Hamburg. The Hamburg dealers draw their supplies from the Ukrain. "Having exhausted all the lakes of Siberia, Bohemia, and other more frequented parts of Europe, the buyers are now rolling gradually and implacably eastward, carrying death and desolation among the leeches in their course, sweeping all before them, till now they have got as far as Pultava, the pools and swamps about which are yielding them great captures," (Brenner, *Excurs. in the Interior of Russia.*)

Leeches are sometimes imported in bags but more usually in small barrels, each holding about 2,000, the head being made of stout canvas, to admit the air. The best vessels for preserving these animals are unglazed brown pans or wooden tubs. The dealers have a notion (and possibly a correct one) that the leaden glazing is injurious. These pans should be very little more than half filled with soft water (pond, river, or rain water.) This does not require changing so often as is commonly supposed. In very hot weather, or when the water has become bloody, or otherwise much discoloured, it should be changed every day or so; otherwise, in summer every four or five days or a week, in winter once a month, is believed by large dealers to be sufficient.

The *consumption of leeches* must be enormous. Some years ago it was stated that four principal dealers in London imported on the average, 600,000 monthly, or 7,200,000 annually. (Price, *Treat. on Sanguisuct.*) Feé (*Cours d'Hist. Nat.*) says, "It is estimated that 3,000,000 are annually consumed in Paris; and as the population of Paris is to that of the whole of France as one is to thirty-three, it follows that, independently of exportation, 100,000,000 are consumed annually, which is equivalent three leeches annually for each person. Now, if we estimate the average price at fifty francs per thousand, we shall have the enormous sum of five millions of francs paid for this one article of our materia medica."—Pereira.

THE ALPS AFTER SUNSET.

While the eye is feasting on the rich tints which succeed to the bright light of day, and wishes they might last for ever, the rose colour gradually dies away, and its place is taken by a livid, dead white, resembling so fearfully that of a corpse, that I felt quite shocked as well as startled by the change,—nor have I ever met with any one whose nerves were not more or less disturbed by this painful transition from the blush of health, as it were, to the paleness of death! I have seen very wild deserts in Peru and else where, and many other scenes of desolation in the world, but none which has struck me with so deep a feeling or melancholy as the sight of Mont Blanc during the period, fortunately a brief one, in which this livid hue is spread over it. Before the shades of night finally settle over all, a very slight and scarcely perceptible return of the rose-tint is often visible on the snow, a sort of reanimation of the scene, which is most cheering and consolatory.—Captain Basil Hall.

EVENTIDE.

There is an eventide in the day, and hour when the sun retires and the shadows fall, and when nature assumes the appearance of soberness and silence. It is an hour which in all ages the good have loved, as bringing with it sentiments and affections more valuable than all the splendour of the day. Its first impression is to still all the turbulence of thought or passion which the day may have brought forth. When all is silent around us, we feel a kindred stillness breathe upon our souls, and calm them from the agitations of society. In the day we live with men, in the eventide we begin to live with nature. We see the world withdrawn from us, the shades of night darken over the habitations of men, and we feel ourselves alone. It is an hour fitted to still, but with a gentle hand, the throb of every unruly passion, and to waken in our hearts those pure affections which the glare of day may have dissolved. While the shades of night darken upon our dwellings, the splendours of the firmament come forward to our view. Heaven opens to our eyes the radiance of a sublimer being; and while we forget for a time the obscurity of earthly concerns, we feel that there are "yet greater things than these."—Alison.

NATIVES OF TIERRA DEL FUEGO.

THE Indians of Tierra del Fuego appear to be generally inferior to those of Patagonia, (see p. 99.) They are in person considerably shorter and smaller. Captain King gives the following account of a party who visited his ship, the *Adventure*, during his survey of the southern shores of South America, in 1827.

These natives conducted themselves quietly, and, except one of the women, who wished to keep a tin-pot in which some water had been given her, made no attempt to pilfer. Their canoes were paddled by the women, occasionally helped by the men. One or two of the former were young and well featured, but the rest were hideous; and all were filthy and most disagreeable, from the quantity of seal-oil and blubber with which they had covered their bodies. After we had obtained, by barter, all the articles they had to dispose of, I presented them with red caps and medals, of which they were very proud.

Their astonishment was much excited, and they were pleased by hearing a watch tick; but I believe I had very nearly, though unintentionally, given great offence, by cutting off a lock of hair, from the head of one of the men. Assuming a grave look, he very carefully wrapped the hair up, and handed it to a woman in the canoe, who, as carefully, stowed it away in a basket, in which is kept her beads and paint; the man then turned round, requesting me, very seriously, to put away the scissors, and my compliance restored him to good-humour.

They were ill-clothed, with mantles made of guanaco, or otter-skins, but not so neatly as those of the Patagonians. Their bodies were smeared over with a mixture of earth, charcoal, or red ochre, and seal-oil; which, combined with the filth of their persons, produced a most offensive smell. Their hair was bound by a fillet of plaited twine, made perhaps with strips of bark, and a few of them had it turned up; but to none did it appear to be an object of attention, except one of the young women, who repeatedly combed and arranged hers with the well-toothed jaw of a porpoise.

The next morning, seeing us under weigh, they came alongside, and tried to induce us to anchor again. One young man was very importunate, and his wife used all her fancied allurements to second his proposal, So highly did they esteem beads and buttons, that a few of each would have purchased the canoe, the wife, and children, their dogs, and all the furniture.

Captain Stokes says that the average height of those that he met with was five feet, five inches; their habit of body spare; the limbs badly turned, and deficient in muscle; the hair of their head black, straight, and coarse; their beards, whiskers, and eyebrows, naturally exceedingly scanty, are carefully plucked out; their forehead is low; the nose rather prominent, with dilated nostrils; their eyes are dark, and of a moderate size; the mouth is large, and the under lip thick; their teeth are small and regular, but of a bad colour. They are of a dirty copper colour; their countenance is dull, and devoid of expression. For protection against the rigours of these inclement regions, their clothing is miserably suited; being only the skin of a seal, or sea-otter, thrown over the shoulders, with the hairy side outward. The tracts they inhabit are altogether destitute of four-footed animals; they have not domesticated the geese or ducks which abound here, of tillage they are utterly ignorant, and the only vegetable productions they eat are a few wild berries, and a kind of sea-weed.

Their principal food consists of muscles, limpets, and sea-eggs, and, as often as possible, seal, sea-otter, porpoise, and whale. Former voyagers have noticed the avidity with which they swallow the most offensive offal, such as decaying seal-skins, rancid seal and whale-blubber, &c. When on board my ship, they ate or drank greedily whatever was offered to them, salt-beef, salt-pork, preserved meat, pudding, pea-soup, tea, coffee, wine, or brandy—nothing came amiss. One little instance, however, showed what they preferred. As they were going ashore, a lump of the tallow used for arming the lead was given to them, and received with particular delight. It was scrupulously divided, and placed in the little baskets which they form of rushes, to be reserved for eating last, as the richest treat.

The nature of their domestic ties we had no opportunity of observing; their manner towards their children, is affectionate and caressing. I often witnessed the tenderness with which they tried to quiet the alarms our presence at first occasioned, and the pleasure which they showed when we bestowed upon the little ones any trifling trinkets.

Captain King thus speaks of a party that visited his ship in March, 1828:—

They conducted themselves very quietly during their stay on board, with the exception of one who tried to pick my pocket of a handkerchief; the offender was ordered out of the vessel, and there was no further attempt to pilfer. They wished to go below, but this was not permitted, because the odour of their oily persons was scarcely tolerable, even in the open air. As to food, tallow candles, biscuit, beef, plum-pudding, were equally liked, and swallowed most voraciously. One of them was discovered taking the tallow out of the end of the deep sea-lead and eating it, although mixed with sand and dirt.

Their method of carving their food is similar to that of the Esquimaux Indians; a piece of blubber being held in the left hand, a corner of it is taken between the teeth, and it is then cut by a knife, held under-handed, into strips backward and forward, without passing the instrument entirely through, so that when the operation is finished, the piece draws out into a long band, about an inch thick, formed by the connected strips. The whole affair from first to last is most offensive to the sight, and the countenance of the carver is beyond description, for his eyes being directed to the blubber, squint shockingly, and give his ugly face a hideous appearance. The strip of blubber is next divided among the party, each of whom proceeds to extract its oily juices by drawing it through his teeth and sucking it, after which it is warmed in the fire to facilitate division into small pieces, which are swallowed, or bolted, without mastication. Morsels of this dainty food were given not only to the elder children, but even to infants at the breast. The next day, the women had daubed their faces all over with bright red ochre, to add to their beauty, no doubt.

The following is Captain Fitz-Roy's account of his first interview with the Fuegians, during his operations in her Majesty's ship the *Beagle*.

On the 13th April, 1829, when working near the land, against a light southerly breeeze, we saw a small canoe paddling along shore, and some people walking on the beach. While the ship was standing off, I went to them, being the first savages I had ever met. In the canoe were an old man, his daughter, and a child, and on shore were two Fuegian men with several dogs. Their figures reminded me of drawings of the Esquimaux, being rather below the middle size, wrapped in rough skins, with their hair hanging down on all sides, like old thatch, and their skins of a reddish-brown colour, smeared over with oil, and very dirty. Their features were bad, but peculiar; and if physiognomy can be trusted, indicated cunning, indolence, passive fortitude, deficient intellect, and want of energy. I observed that the forehead was very small, and ill-shaped; the nose was long, narrow between the eyes, and wide at the point, and the upper lip long and protruding. They had small, retreating chins; bad teeth; high cheek-bones; small Chinese eyes, at an oblique angle with the nose; coarse hair; wide ill-formed mouths, and a laugh as if the upper-lip were immoveable. The head was very small, especially at the top and back; there were very few bumps for a craniologist. They asked earnestly for "tabac, tabac," but seemed very timid. We bartered some biscuit and old knives for a few of their arrows, skins, spears, &c.

Their canoes, twenty-two feet long, and about three wide, were curiously made of the branches of trees, covered with pieces of beech-tree bark, sewed together with intestines of seals. A fire was burning in the middle, upon some earth, and all their property, consisting of a few skins and bone-headed lances, was stowed at the ends.

The young woman would not have been ill-looking, had she been well scrubbed, and all the yellow clay with which she was bedaubed, washed away. I think they use the clayey mixture for warmth rather than for show, as it stops the pores of the skin, preventing evaporation, and keeping out the cold air. Their only clothing was a skin, thrown loosely about them; and their hair was much like a horse's mane that has never been combed.

Captain Fitz-Roy subsequently found the natives extremely troublesome, and strongly recommends that weakly manned vessels should avoid them if numerous. In some scuffles with his boat's crew they showed great strength. "It is astonishing," he says, "how very correctly they throw stones, and to what a distance; when the

first stone fell close to us, we all thought ourselves out of musket-shot."

The *Adventure* and *Beagle* lost several boats during their surveying expedition, of which more than one was stolen by the Fuegians. Captain Fitz-Roy was determined to pursue the thieves, but his endeavours to seize the boat were fruitless. In the course of his search he made many prisoners, most of whom subsequently escaped. Thinking that benefit might accrue from having some of them taught English, Captain Fitz-Roy brought to England four of the natives; two young men who were named by the crew "York Minster" and "Boat Memory;" a girl whom they called "Fuegia basket," and a boy who was called "Jemmy Button," because the price given for him was a large shining mother-of-pearl button.

At Monte Video, on the voyage home, these Indians were taken ashore to view the town. "The apparent astonishment and curiosity excited by what they saw," says Captain Fitz-Roy, "extraordinary to them as the whole scene must have been, were much less than I had anticipated; yet their conduct was interesting, and each day they became more communicative. It was here that I first learned from them that they make a practice of eating their enemies taken in war. The women, they explained to me, eat the arms; and the men the legs; the trunk and head were always thrown into the sea."

The acts of cannibalism occasionally committed by their countrymen, were explained to me in such terms, and with such signs, that I could not possibly misunderstand them; and a still more revolting account was given, though in a less explicit manner, respecting the horrible fate of the eldest women of their own tribes, when there is an unusual scarcity of food. This half-understood story I did not then notice much, for I could not believe it, but as, since that time, a familiarity with our language has enabled them to repeat this horrid tale more circumstantially, and as it has been confirmed by the testimony of other Fuegians, I no longer hesitate to state my firm belief of this strange and diabolical atrocity.

Soon after their arrival in England Boat Memory died of small-pox; the others were placed with a schoolmaster at Walthamstow for board and education.

I took them myself, (says the Captain,) from the coach-office to Walthamstow; they were glad to see me, but seemed bewildered by the multitude of new objects. Passing Charing Cross, there was a start and exclamation of astonishment from York. "Look," he said, fixing his eyes on the lion upon Northumberland House, which he certainly thought alive, and walking there. I never saw him show such sudden emotion at any other time. They were much pleased with the rooms prepared for them at Walthamstow; and the schoolmaster and his wife were equally pleased to find the future inmates of their house very well-disposed, quiet, and cleanly people; instead of fierce and dirty savages. At Walthamstow they remained from December, 1830, till October 1831, when they were again taken on board the Beagle, to return to their native land. A young man, named Richard Matthews, accompanied them with the intention of remaining at Tierra del Fuego to instruct the savages. Not a few boats were required to transport to the ship the large cargo of clothes, tools, crockery-ware, books, and various things which the families at Walthamstow and other kind-hearted persons had given.

When approaching Tierra del Fuego, (continues Captain Fitz-Roy,) they seemed to be much elated at the certainty of being so near their own country; and the boy was never tired of telling us how excellent his land was—how glad his friends would be to see him—and how well they would treat us in return for our kindness to him. The attentions which York paid to his intended wife, Fuegia, afforded much amusement to our party. He had long shown himself attached to her, and had gradually become excessively jealous of her good-will. He told me that he would rather live with Jemmy Button in the Tekeenica country, than go to his own people. This was a complete change in his ideas, and I was very glad of it; because it might be far better that the three, York, Jemmy, and Fuegia, should settle together. I little thought how deep a scheme Master York Minster had in contemplation.

We reached Woollya, and selected a space, favourably situated for our encampment, landed, marked a boundary-line, placed sentries, and made the various arrangements necessary for receiving the anticipated visits of some hundred natives. Canoes began to arrive, their owners hauled them ashore on the beach, sent the women and children to old wigwams at a little distance, and hastened themselves to see the strangers. While I was engaged in watching the proceedings at our encampment, and poor Jemmy was getting out of temper at the quizzing he had to endure on account of his countrymen, whom he had extolled so highly until in sight, a deep voice was heard shouting from a canoe more than a mile distant. Up started Jemmy, from a bag full of nails and tools which he was distributing, leaving them to be scrambled for by those nearest, and, upon a repetition of the shout, exclaimed, "My brother!" He then told me that it was his eldest brother's voice, and perched himself on a large stone to watch the canoe, which approached slowly, being small, and loaded with several people. When it arrived, instead of an eager meeting, there was a cautious circumspection that astonished us. Jemmy walked slowly to meet the party, consisting of his mother, two sisters, and four brothers. The old woman hardly looked at him before she hastened away to secure her canoe, and hide her property, all she possessed—a basket containing tinder, fire-stone, paint, &c., and a bundle of fish. The girls ran off with her without even looking at Jemmy; and the brothers (a man and three boys) stood still, stared, walked up to Jemmy, and all round him, without uttering a word. Animals when they meet show far more animation and anxiety than were displayed at this meeting. Jemmy was evidently much mortified, and to add to his confusion and disappointment, as well as my own, he was unable to talk to his brothers, except by broken sentences, in which English predominated. After a few minutes had elapsed, his elder brother began to talk to him; but although Jemmy understood what was said, he could not reply. York and Fuegia were able to understand some words, but could not, or did not choose to speak.

Many of the natives assisted us in carrying wood, and bringing bundles of grass or rushes to thatch the wigwams which they saw we were making, in a pleasant sheltered spot, near a brook of excellent water. One wigwam was for Matthews, another for Jemmy, and a third for York, and Fuegia. York told me that Jemmy's brother was "very much friend," that the country was "very good land," and that he wished to stay with Jemmy and Matthews. A small plot of ground was selected near the wigwams, and, during our stay, dug, planted and sowed with potatoes, carrots, turnips, beans, peas, lettuces, onions, leeks, and cabbages. Matthews and his party—Jemmy, York, and Fuegia—went to their abode in the three new wigwams. In that made for Matthews, Jemmy also took up his quarters at first: it was high and roomy for such a construction; the space overhead was divided by a floor of boards, brought from the ship, and there most of Matthews's stores were placed, but the most valuable articles were deposited in a box, which was secretly hid in the ground underneath the wigwam, where fire could not reach. Matthews was steady and as willing as ever, neither York nor Jemmy had the slightest doubt of their being all well-treated; so trusting that Matthews, in his honest intention, to do good, would obtain that assistance in which he confided, I decided to leave him for a few days.

Nine days afterwards we returned to Woollya, and the sight of several bits of cloth with which the Indians we saw on shore were decorated, made me feel very anxious about Matthews and his party. Our boats touched the shore; the natives came hallooing and jumping about us, and then, to my extreme relief, Matthews appeared, dressed, and looking as usual. After him came Jemmy and York, also dressed and looking well; Fuegia they said was in a wigwam. Matthews gave a bad account of the prospect which he saw before him, and told me that he did not think himself safe among such a set of utter savages as he found them to be. No violence had been committed, beyond holding down his head by force, as if in contempt of his strength; but he had been harshly threatened by several men, and from the signs used by them, he felt convinced they would take his life. Sometimes a party of them gathered round him, and if he had nothing to give them, teased him by pulling the hair of his face, pushing him about, and making mouths at him; his only partisans were the women. Now and then he left Jemmy to guard the hut, and went to the natives' wigwams, where the women always received him kindly,

making room for him by their fire, and giving him a share of whatever food they had, without asking for anything in return. York and Fuegia fared very well; they lost nothing, but Jemmy was sadly plundered, even by his own family. Our garden, upon which much labour had been bestowed, had been trampled over repeatedly, although Jemmy had done his best to prevent the people from walking there. When questioned about it, he looked very sorrowful, and, with a slow shake of the head, said, "My people very bad; great fool; know nothing at all; very great fool." It was soon decided that Matthews should not remain. I considered that he had already undergone a severe trial, and ought not to be again exposed to such savages, however willing he might be to try them farther, if I thought it right. The next difficulty was how to get Matthews's property safely into our boats in the face of a hundred Fuegians. This, however, was accomplished, and after distributing several useful articles, we departed from the wondering throng assembled on the beach.

On the 5th of March, 1834 (thirteen months afterwards), the Beagle anchored at Woollya. The wigwams in which we had left York, Jemmy, and Fuegia were found empty, though uninjured: the garden had been trampled over, but some turnips and potatoes of moderate size were pulled up by us, and eaten at my table, a proof that they may be grown in that region. Not a living soul was visible anywhere; the wigwams seemed to have been deserted many months; and an anxious hour or two passed, after the ship was moored, before three canoes were seen in the offing, paddling hastily towards us, from the place now called Button Island. Looking through a glass I saw that two of the natives in them were washing ther faces, while the rest were paddling with might and main: I was then sure that some of our acquaintances were there, and in a few minutes recognised Tommy Button, Jemmy's brother. In the other canoe was a face which I knew, yet could not name. "It must be some one I have seen before," said I,—when his sharp eye detected me, and a sudden movement of the hand to his head (as a sailor touches his hat) at once told me that it was indeed Jemmy Button—but how altered! I could hardly restrain my feelings, and I was not, by any means, the only one so touched by his squalid, miserable appearance. He was naked, like his companions, except a bit of skin about his loins; his hair was long and matted, just like theirs; he was wretchedly thin, and his eyes were affected by smoke. We hurried him below, clothed him immediately, and in half an hour he was sitting with me at dinner in my cabin, using his knife and fork properly, and in every way behaving as if he had never left us. He spoke as much English as ever, and, to our astonishment, his companions, his wife, his brothers and their wives, mixed broken English words in their talking with him. Jemmy recollected every one well, and was very glad to see them all, especially Mr. Bynoes, (the surgeon,) and James Bennett. I thought he was ill, but he surprised me by saying that he was "hearty, sir, never better," that he had not been ill, even for a day, was happy and contented, and had no wish whatever to change his way of life. He said that he got "Plenty fruits," (excrescences of the birch-trees and berries,) "plenty birdies," "ten guanaco in snow time," and "too much fish." Besides, though he said nothing about her, I heard that there was a good-looking young woman (for a Fuegian) in his canoe, who was said to be his wife. Directly this became known, shawls, handkerchiefs, and a gold-laced cap appeared, with which she was speedily decorated; but fears had been excited for her husband's safe return to her, and no finery could stop her crying until Jemmy again showed himself on deck. While he was below his brother Tommy called out in a loud tone—"Jemmy Button, canoe come!" After some time, the three canoes went ashore, laden with presents, and their owners promised to come again early next morning. Jemmy gave a fine otter-skin to me, which he had dressed and kept purposely; another he gave to Bennett.

Next morning, Jemmy shared my breakfast, and then we had a long conversation by ourselves; the result of which was, that I felt quite decided not to make a second attempt to place Matthews among the natives of Tierra del Fuego. Jemmy told me that he knew very little of his own language; that he spoke some words of English, and some Tekeenica, when he talked to his family; and that they all understood the English words he used. York and Fuegia left him some months before our arrival, and went in a large canoe to their own country. The last act of that cunning fellow was to rob poor Jemmy of all his clothes; nearly all the tools his Tekeenica "friends" had left him; and various other necessaries. Fuegia was dressed as usual, and looking well, when they decamped: her helpmate was also well clothed, and hardly lost anything I left with him. Jemmy said "York very much jaw," "pick up big stones." "all men afraid." Fuegia seemed to be very happy, and quite contented with her lot. Jemmy asserted that she helped to "catch (steal) his clothes," while he was asleep, the night before York left him naked.

It was generally remarked that his family were become considerably more humanized than any savages we had seen in Tierra del Fuego: that they put confidence in us; were pleased by our return; that they were ready to do what we could explain to be for their interest; and in short, that the first step towards civilization—that of obtaining their confidence—was undoubtedly made: but an individual, with limited means, could not then go farther. The whole scheme, with respect to establishing a missionary with the Fuegians who were in England, among their countrymen, was on too small a scale, although so earnestly assisted by Mr. Wilson, Mr. Wigram, Mr. Coates, and other kind friends.

I cannot help still hoping that some benefit, however slight, may result from the intercourse of these people,—Jemmy, York, and Fuegia, with other natives of Tierra del Fuego. Perhaps a ship-wrecked seaman may hereafter receive help and kind treatment from Jemmy Button's children; prompted, as they could hardly fail to be, by the traditions they will have heard of men of other lands; and by an idea, however faint, of their duty to God as well as their neighbour. That Jemmy felt sincere gratitude is, I think, proved by his having so carefully preserved two fine otter skins, as I mentioned; by his asking me to carry a bow and quiver full of arrows to the schoolmaster at Walthamstow, with whom he had lived; by his having made two spear-heads expressly for Mr. Darwin; and by the pleasure he showed at seeing us all again.

As nothing more could be done, we took leave of our young friend and his family, every one of whom was loaded with presents, and sailed away from Woollya.

WORLDLY FRIENDSHIP.

THERE is within the world in which we dwell
A friendship answering to that world full well;
An interchange of looks and actions kind,
And, in some sense, an intercourse of mind;
A useful commerce, a convenient trade,
By which both parties are the happier made:
And, when the thing is rightly understood
And justly valued, it is wise and good.

I speak not here of friendships that excite
In boys at school such wonder and delight,
Of high heroic friends, in serious strife,
Contending which should yield a forfeit life—
Such wondrous love, in their maturer days,
Men, if they credit, are content to praise.

I speak not here of friendships true and just,
When friend can friend with life and honour trust;
Where mind to mind has long familiar grown,
And every failing, every virtue known.
Of these I speak not; things so rich and rare,
That we degrade with jewels to compare,
Or bullion pure and massy. I intend
To treat of one whose neighbour called him friend,
Or called him neighbour; and with reason good—
The friendship rising from the neighbourhood.
A sober kind, in common service known;
Not such as is in death and peril shown:
Such as will give or ask a helping hand,
But no important sacrifice demand;
In fact, a friendship that will long abide,
If seldom rashly, never strongly, tried.
Yes! these are sober friendships, made for use;
And much convenience they in life produce.
Like a good coat, that keeps us from the cold,
The cloth of frieze is not a cloth of gold;
But neither is it piebald, pieced, and poor,—
'Tis a good useful coat, and nothing more.—CRABBE.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 595. OCTOBER 9TH, 1841. {PRICE ONE PENNY.

THE COTTAGES OF SWITZERLAND

SWISS COTTAGES.

Thus every good his native wilds impart,
Imprints the patriot passion on his heart;
And e'en those ills that round his mansion rise
Enhance the bliss his scanty fund supplies:
Dear is that shed to which his soul conforms,
And dear that hill which lifts him to the storms;
And as a child, when scaring sounds molest,
Clings close and closer to the mother's breast,
So the loud torrent, and the whirlwind's roar,
But bind him to his native mountains more.—GOLDSMITH.

SWITZERLAND occupies a singular position among European nations. It has no connexion whatever with the ocean, but is hemmed in by three large countries, Germany, France, and Italy. This circumstance has naturally given to its inhabitants and its institutions a certain mixed resemblance to all three of those countries. But this resemblance is less striking than would in most cases be found, on account of the mountain-chains which serve as a barrier between Switzerland and the neighbouring countries. These mountains are more particularly remarkable for their size and extent on the southern side of Switzerland, where they separate it from Italy, and this is precisely the part where the influence of a neighbouring nation has been least felt, for Switzerland and its inhabitants resemble Italy much less than it resembles either Germany or France. But there is a peculiar character about the Swiss, which, in truth, separates them from all three of the countries we have named. This is as observable in their dwellings as in any part of their economy. A Swiss cottage is associated in our minds with a kind of edifice differing a good deal from those of Germany, Italy, or France.

A Swiss cottage in the Canton de Vaud, according to the description of M. Simond, very frequently bears the following character. It is not unusually of the enormous size of eighty or one hundred feet square. It is very low, but has an exceedingly lofty shingle roof, which is loaded with large stones, to prevent it from being blown away with the wind, and projects, in the piazza shape, over an outside gallery, up a flight of stairs. This is properly the ground floor, or rather the snow floor, for the lower floor, ramparted as it is with fire-wood, and buried in snow in winter, becomes a sort of cellar, where the provisions are kept, and where the cows are housed. A large door, in the centre of the building, gives entrance to the various farming carriages and implements, as well as to all the winter fodder: thus the stable, the barn, and the dwelling, are all under the same roof, with all the apparatus of home manufactures, carried on in winter, and their produce, cheese, butter, &c The family have access to all parts of this their domestic world, without ever stepping out of doors. These houses (which a single spark might set in a blaze), as well as all the houses in the Canton de Vaud, are obliged by law to be insured. The accounts are kept by government, free from any contingent charges of administration, and the proprietors of houses pay no premium, but only their respective share of losses by fire. The houses are estimated at three-fourths of

their value only, and the aggregate of losses is equal to about one in a thousand yearly.

The same traveller, being located for a time in another part of Switzerland, gives a description of a cottage apparently rather more humble than the average run of them. It was, however, built of larch, and was spacious and clean. It had a large common room up stairs, with several windows to it. The furniture of the room consisted of a long bench round three sides, and a long table before it: an enormous earthen stove was so placed and constructed as to answer the purpose of steps to ascend to the next story above, by an opening in the ceiling of the room. The kitchen, in another part of the building, had no chimney, but the smoke issued out through a hole in the roof, covered with a shutter that was opened or closed by pulling a rope. Above the first floor, built of stone, the structure was composed of square beams, placed one over the other, and dovetailed at the angles of the building, the whole covered with boards, within and without. Although the sides of the building showed only one story above the ground floor, yet the gable end, or rather front, had four or five, each marked by a row of small contiguous windows. This front was decorated with passages from the Scriptures, inscribed very neatly on the wood. The wood was not painted, but the turpentine, which had long before oozed through its pores, had hardened on the surface to a kind of varnish.

An entertaining English writer, lately deceased, Mr. Inglis, has given a very detailed account of the houses, within and without, in a part of Switzerland called *Engadine*:—

During my day's walk I passed through many large villages, the names of which I do not recollect, but whose size appeared to me very disproportionate to the extent of the valley in which I found them. The great size of the houses, however, partly accounts for this. In no part of Europe have I seen the houses of the natives so large as I found them throughout the whole of the Unter and Ober Engadine.

He then proceeds to state that a village in every part of the Engadine is the same. It consists of one street, long or short, as the case may be, with some few and very short lateral openings, scarcely deserving the name of streets. In some part of the street there is an open space, with a fountain in the centre,—plain, but not ineligant, and closely adjoining the village, but seldom forming a part of it, is the village church,—in size and architecture nearly resembling the country churches in Scotland.

The houses in these villages are of an enormous size: indeed Mr. Inglis affirms that they cover an area greater than that occupied by any two houses in Portland Place. Their height never exceeds two stories, and the roof, which is covered with square pieces of wood, laid on like slates, upon which trunks of fir-trees are placed transversely, falls back at a very acute angle. The exterior of the houses presents a good deal of decoration. Upon the white plaster copies of Greek and Roman designs are painted in lead colour: painted Doric or Corinthian columns adorn the door-posts, and the imitation is so good as to deceive a spectator until he approaches near. The door or gateway is generally arched, and painted with some tasteful design. Sometimes an imitation of a Greek pediment is painted over the windows, and in some instances every part of the exterior is painted with one uniform design, the whole front and sides being set off with pillars, pilasters, pediment, &c.; so as to give at a distance some resemblance to a Grecian temple.

It is difficult (says Mr. Inglis) to understand how this custom and taste have arisen. The painting is for the most part old, and in some places has been renewed, but not with equal skill; and upon the houses recently erected nothing of the kind has been attempted. These, however, are but few, and form a very trifling exception when speaking of the appearance of the Engadine villages. I cannot conceive any other origin of so singular and so universal a practice than that some Grison architect, who had left his native valleys, acquired in Italy a taste for the classic models of that land, and returning to his country, exercised his profession, and, at the same time, fed his recollection of the glorious things he had seen, by adorning the buildings of his native village. The taste might soon spread, and in the six or eight villages of the Ober Engadine a few years only would be required to satisfy its demands. In all that I have yet said, or may still say, respecting the villages and houses of the Engadine, I speak with reference to both the Ober and Unter Engadine, with the exception of the painting upon the walls, which I think is confined to the Ober Engadine; at all events it does not extend to more than one village in the lower valley. Let me add to this description of the exterior of the houses, that upon some part of the wall, generally over the gate, is found an inscription, sometimes in Roman, sometimes in Latin, indicating the period at which the house was built, setting forth the name of the builder, and containing, besides, a recommendation of the house and its inhabitants to the protection of God.

Mr. Inglis then describes the interior of these dwellings. Within the gateway or door is a spacious chamber, with an earthen floor, which serves as a sort of inner court-yard, and which presents a strange contrast to the ornamented gateway. This apartment is used as a general store-house. Ranged on one side are all the utensils required in a dairy, such as churns, cheese-presses, and the innumerable flat wooden dishes, used for the reception of the milk. On another side are various agricultural implements, together with ladders, saws, and other tools. Several spinning-wheels stand in one corner: a quantity of skins are heaped in another: and one end is always devoted to the fuel, and is heaped with wood as high as the roof. From this large store-room are entrances leading to the different apartments, the kitchen, the eating rooms, and other rooms, varying in number according to the size of the house and the necessities of the family. The furniture of these rooms is always abundant, substantial, and sometimes ornamented with carved wood-work. The sleeping-rooms are almost always above stairs, but scarcely correspond in convenience with the lower part of the house.

Swiss houses appear to have been built of wood for many ages past: probably the majority of them have never been formed of any other material. Coxe, writing sixty years ago, respecting the canton of Appenzel, says:—

In our way to Appenzel we entered several houses which were all built of wood, neatness and convenience being the principal object of the owners: such a remarkable cleanliness prevailed throughout as afforded a most striking proof of the general attention which people pay to that essential article. A continued chain of these cultivated mountains, richly clothed with wood, and thickly studded with hamlets, exhibit a series of landscapes inexpressibly pleasing.

In another passage, speaking of Aargau, he says:—

The houses, like those of Appenzel and Glarus, are generally of wood, and it was a natural observation of one of our servants, in passing through a continued chain of rocks, that as there was no deficiency of stone, it seemed extraordinary to employ wood alone for the purposes of building. But it may be remarked that these wooden houses are soon constructed and easily repaired, and being formed in a compact manner, with small rooms, and low ceilings, are sufficiently warm even for so cold a climate. The chief objection arises from the danger of fire, which, however, is in some measure obviated by the method of building their cottages detached from each other. But this observation does not hold with respect to some of the largest burghs, which are exposed to the ravages of this dreadful calamity.

Of course the dwellings in Switzerland vary with the place where they are built, and with the means of those to whom they belong; but the cut at the head of this article may be considered as a genera. representative of the houses in the romantic valleys of that country.

MEMOIR OF THE LATE DR. THOMAS YOUNG.

In 1831, a memoir of Dr. Thomas Young, one of the most distinguished men of the age, was printed solely for private distribution, and with the hope, modestly expressed on the part of the writer, that the "imperfect sketch" then produced would afterwards be filled up by "some abler hand."

With the exception of the short but masterly sketch given by the celebrated M. Arago, in the *Revue des Deux Mondes*, this hope has not been yet fulfilled; but as the name of Young, and the fame of his extraordinary attainments, may have reached many of our readers, and excited a desire for further information respecting this highly gifted individual, we proceed to lay before them such details as may be conveniently gathered from the sources above alluded to.

Thomas Young was born at Milverton, in Somersetshire, on the 13th of June, 1773. His parents were Quakers, and of the strictest of that sect: his mother was a niece of Dr. Richard Brocklesby, a physician of eminence, who was connected with some of the most distinguished literary and political characters of his time, and who numbered among his most intimate friends Johnson, Burke, and Windham. To the influence of the early impressions of the Quaker tenets Dr. Young "was accustomed to attribute in some degree the power he so eminently possessed of an imperturbable resolution to effect any object on which he was engaged, which he brought to bear on everything he undertook, and by which he was enabled to work out his own education almost from infancy, with little comparative assistance or direction from others." He passed the first years of his life at the house of his maternal grandfather, Mr. Robert Davies, of Minehead, whom active commercial engagements had not prevented from cultivating the classics.

Young appears to have been a forward, if not a precocious child; but unlike the majority of such children, he abundantly fulfilled the expectations of his friends, so that his after course more than corresponded with the promise of his youth. At the age of *two years* he could read fluently, and showed signs of an extraordinary memory. Very soon after this, in the intervals of his attendance at a village school at Minehead, he committed to memory a number of English verses, and by the time he was four years old he had learned by heart a variety of English authors, and even different Latin poems, which he could recite from beginning to end, though unacquainted with the language. Before he was six years old he was sent to a school kept by a dissenting minister at Bristol. Here the mediocrity of his master proved no barrier to his progress, for he became essentially his own instructor, and had generally studied the last pages of his books before he had reached the middle under the eye of the teacher.

When he was eight years old he attracted the attention of a land-surveyor of merit, residing near his father's house, and was allowed to spend as much time as he liked during the holydays, in the office of that gentleman, where he was indulged with the use of mathematical and philosophical instruments, and the perusal of three volumes of a *Dictionary of Arts and Sciences*. These were to him sources of instruction and delight, of which he never seemed to be weary. At this time he acquired some knowledge of land-surveying, and amused himself in his walks by measuring heights with a quadrant.

From the age of nine to his fourteenth year Young lived with a Mr. Thomson, at Compton, in Dorsetshire, where he was occupied, in common with the other boarders, with a close attention to Greek and Latin. He was always at the head of his class, and yet at the same time he made some progress in French, Italian, Hebrew, Persian, and Arabic. The French and Italian he learned in order to satisfy the curiosity of a companion, who had in his possession several works printed at Paris, of which he wished to know the contents; the Hebrew to read the Bible in the original; the Persian and Arabic with a view of deciding this question, raised during a conversation at dinner,—"Are the differences between the Oriental languages as marked as between those of Europe?" Without the certainty that we gather our information from authentic sources we should hesitate to add, that at the time when he was making this extraordinary progress in languages, he entered so ardently on the study of botany that in order to examine plants he set about the construction of a microscope, without any other guide than the descriptions given by Benjamin Martin. In order to succeed in his difficult task he found it necessary to acquire much dexterity in the art of turning, and falling upon a demonstration in Martin's *Philosophy*, which exhibited some fluxional symbols, he was not satisfied until he had read and mastered a short introduction to the doctrine of fluxions.

Such incessant activity had the effect which might have been expected, and at fourteen years the health of Young was greatly changed. He was attacked by symptoms of what his friends feared to be incipient consumption,—symptoms which happily yielded, after a time, to the prescriptions of art and the extreme care of his parents. During his indisposition he merely relieved his attention by what to him stood in the place of repose—a course of Greek reading in such authors as amused the weariness of his confinement. In the year 1787 he became the fellow-pupil of the grandson of Mr. David Barclay, of Youngsbury, in Hertforshire, it having been agreed that the two youths should pursue their studies together, under a private tutor, at Mr. Barclay's house. As a proof of his proficiency at this period we may give the following anecdote. On the day of his arrival at Youngsbury Mr. Barclay gave him some sentences to copy, to ascertain if he wrote a good hand. Young, perhaps a little humbled at such a proof being required, asked permission to retire into an adjoining room. He remained longer than appeared necessary, and Mr. Barclay began to joke about the young quaker's want of dexterity; but he presently returned with a remarkably beautiful copy, and a translation of the sentences into nine different languages.

According to the Memoir we principally follow, the tutor did not arrive, and Young took it on himself not only to direct the studies of his companion, but of another student, who now joined them, Mr. Hodgkin, author of the *Calligraphia Græca*. But M. Arago gives us a different account. He says, the preceptor who directed the studies of the two young scholars at Youngsbury was a distinguished young man, then engaged in perfecting himself in a knowledge of the ancient languages, and was afterwards the author of the *Calligraphia Græca*. He was not long, however, in perceiving the superiority of one of the two pupils, and observed with the most laudable modesty, that in their common studies, the true *tutor* was not always he who bore the title.

Thus passed the five years from 1787 to 1792, the summers being spent in Hertfordshire, and the winters in London. The little party of students had the advantage of occasional masters, during their annual visits to the metropolis, and with this aid Young made himself surprisingly familiar with the great writers of antiquity, keeping ample notes of his studies. He had now acquired facility in writing Latin, composed Greek verses, which were well received by the distinguished scholars of the day, and applied himself assiduously to the higher mathematics. To the studies of botany, zoology, and especially entomology, he at the same time paid considerable attention. He drew up from original sources a detailed analysis of the numerous systems of philosophy

which were professed in the different schools of Greece. The train of thought excited by the study of the conflicting opinions of the ancients is supposed to have mitigated in some degree Young's attachment to the views of his own sect, the quakers, from whose society he subsequently separated himself, during his residence in Edinburgh. In the course of his visits to London he attended the chemical lectures of Dr. Higgins, and having previously prepared himself by reading on the subject, he began to make simple experiments of his own. But he was never fond of repeating experiments, nor even of originating new ones, considering that, however necessary to the advancement of science, they demanded a great sacrifice of time, and that when the fact was once established, that time was better employed in considering the purposes to which it might be applied, or the principles which it might tend to elucidate.

Dr. Brocklesby, the maternal uncle of Young, being justly proud of the success of the young scholar, communicated some of his compositions to philosophers and literary men, and thus introduced him to the notice of Burke, Windham, and other celebrated characters. By means of their patronage, Young might easily have secured some lucrative post under government, but he preferred the independent though laborious career of a literary life. By the advice of his uncle, he directed his views to the studies necessary for the practice of physic. These studies were commenced in London under Baillie and Cruickshank, and continued at Edinburgh, where Doctors Black, Baillie, and Munro, were then highly distinguished. Young took his degree at Göttingen in 1795.

The biographer of Young justly remarks that his self-conducted education in privacy, was not without its disadvantages: that though the acquirements he made during those five years of seclusion were great, he was not gaining that which is acquired insensibly in the conflict of equals in the commerce of the world,—the facility of communicating knowledge in the form that shall be most immediately comprehended by others, and the tact in putting it forth that shall render its value immediately appreciated.

Before taking his degree, Young had become known to the scientific world by a controversy which he had carried on with Dr. Beddoes on Crawford's Theory of Heat;—by a Memoir concerning the habits of spiders; and by an observation relating to Gum *Labdanum*. He also communicated to the Royal Society his Observations on Vision, and his Theory of the Muscularity of the Crystalline lens of the Eye, which became the subject of much discussion, John Hunter laying claim to having previously made the discovery. He was soon after elected a fellow of the Royal Society.

In the intervals of more serious pursuits he found leisure for cultivating those arts in which his early education had left him deficient. Everything was with him a science, and whatever he followed he followed scientifically. He cultivated skill in bodily exercises, took lessons in horsemanship, in which he always had great pleasure, and practised under various masters, all sorts of feats of personal agility. The first time he mounted a horse, the riding-master who accompaned him leaped over an elevated barrier; Young wished to follow him, but was thrown over the horse's head ten feet. He got up without saying a word—made a second trial—was again dismounted, but did not pass this time over the head of the animal. On the third trial the young student succeeded in accomplishing what had been done before him. Both at Edinburgh, and at Göttingen he carried these kinds of exercises much farther than might have been expected. He even vied successfully with a distinguished rope-dancer, and acquired extraordinary facility in the art of vaulting on a horse. Thus we find a striking contrast between Newton, riding in a carriage with his arms extended and grasping the coach doors, from the fear of falling; and his illustrious competitor, who would gallop erect upon two horses, with all the assurance of a riding-master.

While at Göttingen, he excited the wonder of his fellow-students by his attainments and almost incredible industry. He had acquired at an early period a profound knowledge of the theory of music. His taste for painting was confirmed during his residence in Germany There his attention was entirely taken up with the collection at Dresden. He studied the defects and peculiarities of the greatest matters, their frequent changes of style, the material objects of their work, and the modifications which the objects and colours underwent in the lapse of time. He is said to have studied painting in Saxony in the same manner as he had studied the languages in his own country, and as latterly he cultivated the sciences. In fact, everything in the sight of Young appeared worthy of meditation and research. His college acquaintances relate that having entered his room during the day that he had received his first lesson in dancing a minuet, they found him busy, with a rule and compass, measuring the intersecting directions which the two dancers followed, and the different improvements which the various figures appeared susceptible of acquiring.

During his residence in Germany he composed a treatise entitled *De Corporis Humani Viribus Conservatricibus*, leaving few volumes unconsulted which had any connexion with his subject. He also gained a very general and accurate acquaintance with the language and literature of Germany, which he kept up throughout his life; he remarked that he found in Germany a love of new inventions, singularly and somewhat pedantically combined with the habit of systematizing old ones. and of giving an importance to things in themselves trifling, which in his case rather confirmed an original habit of dwelling on minutiæ more than his subsequent experience led him to think was advantageous.

THE Russian is scarcely ever seen to strike the animal over which he has power—his horse is seldom propelled by any other influence than a few cheering and encouraging sounds, and if this increases not his pace, he does not, heated with savage fury, dissect the savage beast with a scourge, beat out an eye, or tear out his tongue. The Russian proverb is, "It is not the horse, but the oats, that carry you." As long as the horse will eat, he feeds him; and his appearance generally honours the humanity of his master.

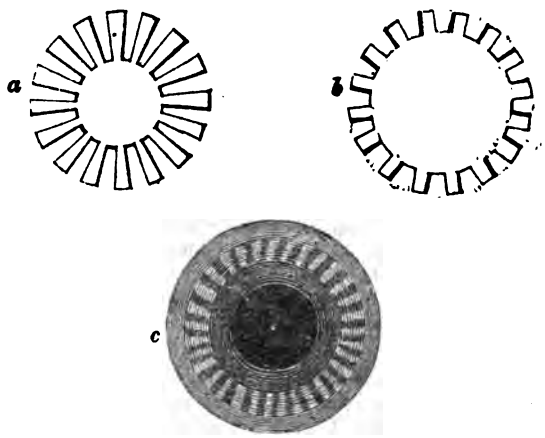
PERDIDI DIEM.

"I HAVE lost a day," said Titus, "for this day
To none have I done good." Oh! rather say,
The day this noble sentiment had birth
Shines out transcendent with enduring worth.
Small the *material* good thou could'st achieve,—
Transient and limited; but Time shall leave
These words a living lesson, potent still
To sway tow'rds generous deeds the human will,
When he hath stript of power Imperial Rome,
And crumbled into dust her proudest dome.—H. W.

THE results of deep research or extravagant speculation seldom provoke hostility, when meekly announced as the deductions of reason, or the convictions of conscience. As the dreams of a recluse or an enthusiast, they may excite pity or call forth contempt; but, like seeds quietly cast into the earth, they will rot and germinate according to the vitality with which they are endowed. But, if new and startling opinions are thrown in the face of the community—it they are uttered in triumph or in insult—in contempt of public opinion, or in derision of cherished errors they lose the comeliness of truth in the rancour of their propagation; and they are like the seed scattered in a hurricane, which only irritates and blinds the husbandman.—SIR DAVID BREWSTER.

OPTICAL ILLUSIONS. VI.

Fig. 1.

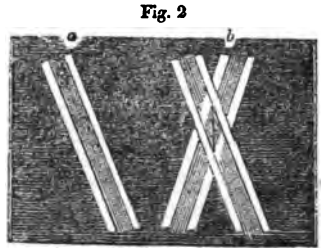


In our last paper on this subject we described several remarkable experiments made by Dr. Faraday, as well as the apparatus which he contrived for conducting them. We now proceed to speak of other experiments, made by the same gentleman.

It will be remembered that in the experiment described at the end of the last paper, two wheels having an equal number of teeth or cogs, but one having the teeth deeper than the other, gave, when viewed in the revolving apparatus, a spectral wheel with double the number of teeth. This is shown by the annexed figure, (fig. 1,) in which *a* is the wheel nearest to the eye, and having the deepest teeth, *b* the other wheel, having, like the other, sixteen teeth, and *c* the spectral wheel, with thirty-two teeth. It would be tedious to follow out the cause of each variety of effect produced in this experiment, but it may suffice generally to say, that they all result from the occurrence of one set of impressions on the retina before a previous set of impressions has lost its influence.

Dr. Faraday describes a very simple experiment, to show the production of a spectral line, where none such exists in the original objects. If a little rod of white cardboard, five or six inches long, and one thirtieth of an inch wide, be moved to and fro, from right to left, before the eye, an obscure or black ground being beyond, it will appear to spread a tint over the space through which it moves, as in fig. 2, *a*. A similar rod held and

Fig. 2



moved in the other hand will produce the same effect, but if there be visually superposed, *i. e.*, if one be moved to and fro behind the other, also moving, then in the quadrangular space included within the intersection of the two tints will be seen a black line, sometimes straight, and connecting the opposite angles of the quadrangle, as in fig. 2, *b*, at other times oval or round, or even square, according to the motions given to the two cardboard rods. This appearance is visible even when the rods are several inches or a foot apart, provided they are visually superposed. By carefully examining the effects produced, and tracing them to their causes, it will be seen that the black line is the path of the intersecting point of the moving rods. As their motions vary, so does the course of this point change, and wherever it occurs there is less eclipse of the black ground beyond than in the other parts, and consequently less light from that spot to the eye than from the other portions of the compound spectrum produced by the moving rods.

In the experiment just described the eye should be fixed, and the part observed should be between the planes in which the rods are moved. Those who find it difficult to observe the effect at first will instantly be able to do so if the rod nearest the eye be black, or held so as to throw a deep shade: the line is then much more distant. Two bright pins or needles produce the effect very well in diffuse day-light, and the line produced by the shadow of one on the other and that belonging to the intersection are easily distinguished and separated. If, while a single bar is moved in one hand, several bars or a grating is moved in the other, then spectral lines, equal to the number of bars in the grating, are produced. If one grating is moved before another, then the lines are proportionably numerous; or, if the distances are equal, and the velocity the same, so that many spectral lines may coincide in one, that one is so much the more strongly marked. If the bars used be serpentine or curved, the lines produced may be either straight or curved at pleasure, according as the positions and motions are arranged, so as to make the intersecting point travel, in a straight, or a curved, or in any other line.

Dr. Faraday shows that the production of a line in this experiment, where none exists in the original objects, depends on the same cause as the production of a spectral wheel, with twice as many teeth as either of the real wheels, in the experiments with the revolving machine; and to show more clearly the nature of this effect he varied the experiments in several different ways.

1. When wheels were used, having equal but oblique teeth, and the obliquity in the same direction, the spectrum was also marked obliquely, but when the obliquity was in opposite directions the spectrum was marked as with straight teeth.

2. When equal wheels were revolved with opposite motions, one rather faster than the other, the spectrum travelled slowly in the direction of the fastest wheel: when the difference in the velocity of the two wheels was made greater the spectrum travelled faster.

3. When one wheel contained more cogs than the other, as, for instance, twenty-four and twenty-two, then with equal motions the spectrum was clear and distinct, but travelled in the direction of the wheel having the greatest number of teeth. When the other wheel was made to move so much faster as to bring an equal number of cogs before the eye, in the same time as the other, the spectrum became stationary again.

4. When the motion of the wheels upon the machine is in the same direction, the velocities equal, and the eye placed in the prolongation of the axis of the wheels, no particular effect takes place. If it so happens that the cogs of one coincide with those of the other, the uniform tint belonging to one wheel only is produced. If they project by the side of each other, it is as if the cogs were larger, and the tint is therefore stronger. But when the velocities vary, the appearances are very curious: the spectrum then becomes altogether alternately light and dark, and the alternations succeed each other more rapidly as the velocities differ more from each other.

5. When wheels with radii, instead of cogs or teeth, are put upon the machine, the carriage-wheel phenomenon is observed with great perfection. They should be viewed obliquely, so as to be visually superposed only in part: and provided the wheels are alike, and both revolving in the same direction with equal velocity, they immediately assume the curved form described in the last paper.

6. If the wheels revolve in opposite directions, then

the spectral lines, originating at each axis as a pole, have another disposition.

7. The carriage-wheel experiment may be further imitated, by mounting the revolving machine with a single wheel carrying several equal radii at equal distances, and holding a small grating between the wheel and the eye. The bars of the grating should be equidistant, the intervals between them being about equal to that between the extremities of two contiguous spokes of the wheel.

As a variation in the mode of observing many of these phenomena Dr. Faraday recommends the following: to cast the shadows of the revolving wheels, either by sun or by candle-light, upon a screen, and observe their appearance. The way in which the cogs or radii of the wheels shut out more or less of a back-ground from the eye will enable them, to an equal degree, to intercept light which would otherwise fall upon a screen. When the two equal cog-wheels are revolved, so as to have the shadows cast upon a white screen, that shadow exhibits all the appearances and variations observed when the eye is looking by the wheels in shade at a white back-ground. The shadow is light where the wheels appear dark, for there the light has passed by the cogs,—and dark where the wheels appear light, for there the cogs have intercepted most of the rays. The screen should be near to the wheels, that the shadow may be sharp, and it is convenient to have one wheel of rather smaller radius than the other, or else to place them obliquely to the sun, for the purpose of distinguishing the shadow of each wheel, and showing how beautifully the spectrum breaks out where they superpose. When the spoke-wheels are revolved they also cast a shadow, presenting either the appearance of fixed or moving radii, according to the circumstances already alluded to.

The same ingenious philosopher also shows that *reflection* will produce a similar train of beautiful effects. If a white cardboard wheel, with equal radii, be fixed upon a pin, and rotated between the fingers before a glass, so that the wheel and its reflected image may visually superpose in part, the fixed hues will be seen passing in curves between the axis of the wheel and the reflected image. If the person gradually recede from the glass, but still look through the wheel in his hand at the reflected image, *i. e.*, still retain them superposed, which is best done by bringing the revolving wheel close to the eye, he will see the lines or radii of the reflected image gradually become straight, and when from three feet to any greater distance from the glass, will see the spectrum of the reflected image, having as many dark radii upon it as there are radii in the wheel he is revolving. Whatever the velocity, or however irregular the motion of the wheel, these lines are perfectly stationary. A very striking deception may be obtained in this way, by revolving a single cog-wheel between the fingers before the glass, when from twelve to eighteen feet from it. It is easy to revolve the wheel before the face, so that the eyes may see the glass through or between the cogs, and then the reflected image appears as if it were the image of a cog-wheel, having the same number of cogs, but perfectly still, and every cog distinct, instead of being the image of one in such rapid motion that by direct vision the cogs cannot be distinguished from each other, or their existence ascertained. The effect is very striking at night if a candle be placed just before the face, and near to it, but shaded by the wheel: in the reflection the wheel is then well illuminated, and the reflected face or shadow forms a good back-ground against which to observe the effect. When we come to speak of M. Plateau's experiments it will be seen that this gentleman made much use of a mirror apparatus for such experiments as these.

Another experiment, beautiful from its very simplicity, was described by Dr. Faraday. A disk of cardboard, about two inches and a half in diameter, was cut into a wheel like fig. 3: another disk, rather larger, was cut into a similar wheel, and then the radii of one were twisted obliquely like thewings of a ventilator, and the radii of the other similarly twisted, but in the opposite direction. A small hole being made in the centre of each, a large pin was passed through that of the smaller wheel, and then a small piece of cork passed on to the pin, to hold the wheel near the head, but free to turn. Two or three beads were then added, the second wheel put on, and then a second piece of cork. The end of the pin was then stuck into a quill or a pencil, and thus was formed an apparatus very like a child's windmill, except that it had two sets of vanes, revolving in opposite directions. On walking across a room towards a window or a candle, with this little toy in the hand, or blowing at it slightly from the mouth, the lines were beautifully seen, being either stationary or moving, according to the relative velocity of the two wheels. This could be altered at pleasure by inclining the vanes more or less, or by blowing towards the centre of the wheels, or towards the edges. when the larger hind wheel received more propulsive force.

Fig. 3.

The more the truths of science are studied, the more evident does it appear that those truths may often be illustrated and experimented on by very simple and cheap apparatus; and these experiments by Dr. Faraday, on the curious and often pleasing illusion under which the evidence of the eye is placed, exemplify this in a prominent manner. We shall shortly resume the subject, by detailing the results of experiments made by other ingenious philosophers.

BUFFALO DANCE OF THE AMERICAN INDIANS.

We observed, coming from the village, a group of Indians, fantastically dressed in buffalo skins, so as to bear a strong resemblance to that beast. They retained the head, beard, and legs of the animal entire, and were so well disguised that several of them, at a little distance, might have been mistaken for the brute itself. They had prepared themselves to give us the buffalo dance. They drew up in a large circle, at a little distance from a skin tent which had been lent to us by them, our own marquee having become much tattered in a heavy gale a few nights previous. The leader of this band was the Big Kaw, who frisked behind the grave head and beard of an enormous buffalo bull. In the centre of the circle were seated a number of buffaloes, whose business it was to sing, while the rest, consisting of chiefs, squaws, and pappooses, or in other words, of bulls, cows, and calves, danced to their music. The chorus commenced with a low, monrnful ditty, which set the whole herd of dancers in motion. They began by moving slowly round the singers, but as the chant grew more and more animated the vivacity of the herd increased. From a walk they quickened their pace to a trot; from a trot it ambled off into a full gallop. Now the spirit of the beast began to show out. The cows bellowed; the bulls frisked, roared, and fought; they kicked up, they tore up the ground, and chased each other round the circle. This lasted some time, until they grew uproarious, and the butting of horns was furious. At this sight the cows drew off, and several calves, after bursting out into a loud bawl, raised up from all fours, and mounting upon their two hind feet, started off for the village—too much frightened to take any further share in the day's diversions. The dance lasted for about two hours after which the Big Kaw, under the form of a seven-year, old bull, came and seated himself upon a billet of wood, at our sides. He appeared perfectly satisfied with his performance, but was grievously out of wind.

After this followed several other dances of a similar character. They received their appellations from different animals, and the merit of a dance consisted in imitating, as nearly as possible the actions of the beast from which it received its name. They continued until late in the afternoon, when the Indians, one after another, departed to their homes; and long before nine o'clock the busy hum was entirely stilled, and a deep silence hung over our tent, and the surrounding prairie.—*Indian Sketches.*

CHINA. XIII.

ISLAND OF CHUSAN.—APPEARANCE OF THE COUNTRY.—RESPECT FOR THE DEAD.—JOS-HOUSES.—BUDHISTS.—MANDARINS.

WE recently presented our readers with some account of Tinghai, or Tinghai-een, a city in the island of Chusan, for which we were indebted to the interesting narrative of Lord Jocelyn: we again avail ourselves of the information he has furnished of what he witnessed in other parts of the island.

A native compradore, (purveyor,) who had been of essential use to our troops in procuring supplies of cattle, and in assisting as an interpreter in default of a better, was, while foraging, seized by mandarin soldiers, and carried away pig-fashion, upon a pole. Two or three small parties were ordered to traverse the island in pursuit of him, one of which was accompanied by our author. He thus describes the scenery of the interior:—

The road, or rather path, was flagged with large square blocks of stone, of sufficient breadth to allow three persons to walk abreast. Through this town, and indeed over the whole island, the roads were of the same description; and from what we have since seen of the tracts of the main land, they appear all on the same model, and of the same breadth. After traversing for some miles a luxuriant sea of paddy-fields, the way wound up the side of the mountains, through a lonely pass: the path here was cut into easy flights of steps, and these passages, which were numerous through the whole island, were all formed in the same manner. The surrounding hills were covered with the tea-plant, cotton, dwarf-oak, and a species of arbutus, rich with its red fruit; whilst their lofty summits towered on high, clad in the bright green pasture. The long valleys seen from the ascent stretched from the mouths of the different ravines, some lost in the many windings in the hills, whilst others again swept down to the sea-shore, laden with their luxuriant crops of rice, bending to the morning breeze; and far away over the curious buildings of Tinghai, the British fleet lay anchored on the sleeping water. Here and there, as if dropped at random upon the sides of the hills, were clumps of fine trees; and, peeping through their thick foliage, the roofs of houses and temples diversified the scene. Amongst many of the beautiful groves of trees which here invite the wanderer to repose, spots are selected as the resting-places of mortality: and gazing on these tranquil scenes, where the sweet clematis and fragrant flowers help to decorate the last home of man, the most careless eye cannot fail to mark the beauties of the grave.

It is still a matter of doubt whether the Chinese do not carry their veneration of the dead to the point of adoration; and some centuries ago, the Jesuits, the first missionary labourers in this country, finding it impossible to freeze up the warm affections felt upon this point, turned them into their own channel by inculcating the prayers for the dead upon their proselytes.

The natives of this island do not inter their dead as in the southern provinces; but the corpse is placed upon the ground in a wooden coffin, covered with a lid, easily removed, highly polished, round which the wild flowers and creepers blossom. In most of the houses we entered on the island, these large boxes were the first article that met the eye in the entrance chamber. In the tenanted graves which curiosity induced us to open, the body appeared dressed as in life, the pipe and tobacco lay on the breast, and leaves and rice at the unconscious head.

While the men stopped to breakfast in a temple, we walked on to some of the neighbouring houses. They were all deserted except one, which appeared to belong to the head man of the district; it was buried in a grove of palm and citron trees, and other shrubs unknown to us, and surrounded by a garden where the Cape jessamine and other sweet flowers perfumed the neighbourhood. The building was a good specimen of their country dwellings: on entering through a large wooden gateway we found a yard or court, surrounded on two sides by different out-houses serving as granaries and places to dry fruit, whilst the remaining sides were the apartments of the family and the Hall of Ancestors, a room used in common by all the members of the household. The reason of the large size of these farm-houses is obvious, when it is taken into consideration that they generally contain a father, mother, sons, their wives and children. The front of the Hall of Ancestors was prettily trellised over, and rested on pillars, dry-rubbed and carved; the interior of this large room was surrounded by matted sofas; and little tables stood in the centre, on which were placed the tea-cups and pipes. Under the projecting roof was seated a venerable man, with a long white beard betokening him to be a grandfather, for they never permit its growth until that period. The rest appeared to have fled; and he looked so lonely and desolate, with the tears streaming down his withered face, that, although we were convinced that the compradore had been taken in the neighbourhood of the village, we could not find it in our hearts to capture this patriarch, although he proved to be the elder of the district, and acknowledged having heard the people carrying off the man the previous morning. The heat was intense, and as the men kept continually falling out from its effects, we determined to surround a village and procure coolies to carry the packs and to act as guides.

Having seized a sufficient number for our purpose, we held a parley with a small party that had taken up a position in a neighbouring temple, telling them that our intentions were amicable, and that we required the services of the men we had taken, but would repay them for their labour. During the conversation two little children stole out of one of the houses, and although they were at first terrified by the strangers, I succeeded in tempting one, a very pretty child, to play with a gay cap I wore on my head. A few quarter-dollars soon made us good friends; and the people, seeing we were not the bloody-minded barbarians they expected, became as troublesome from their curiosity and familiarity as they had formerly been coy. No part of our dress was left untouched, and our hands were examined, by which they appeared to judge of our situations in life.

Our halting-places were generally in the temples, and the village supplied us with provisions. The Chinese, as far as these jos-houses are concerned, show very little respect for their religion. Amongst themselves they put them to the same purpose as we did for our troops, and mandarins and travellers of all descriptions use them as caravansaries on their journeys; the mandarins, indeed, if their rank is superior to the jos's as a god, place the latter outside the building during their sojourn.

On the third evening we reached a small town buried in a thick wood, the entrance to which was over a curious bridge, formed, like most of those in Tinghai, of three blocks of stone, or rather slabs, the centre piece lying parallel to the water, whilst the one on each side slants upwards from the bank, resting at one end on the land, and at the other dovetailed into the centre stone. These are often seen fourteen feet long by four or five in breadth; how they manage to place them in the position seems extraordinary, as no machinery for the purpose has been found, and they say it is done merely by manual labour.

The party failed in their endeavours to recover the man of whom they were in search, but took some of the principal inhabitants prisoners, to be held as hostages for his safety. The men had suffered severely from ague and dysentery in their march, but arriving at a sea-port found a steamer to take them back to Tinghai.

In the passage we passed by Poutoo, a small island within musket-shot of Chusan: this is a curious spot, not only from its natural beauties, which are very great

and thought by those who had been at Canton to resemble it, with its rocky stairs, winding along the sides of the hills, clothed with citron and other trees, but also on account of its being the Mecca of the Chinese religion, to which the worshippers of Budh make frequent pilgrimages, somewhat in the style of the Mussulman Hadji. It possesses a large temple, or rather a number of temples, buried in the rocks and jungle; more curious and picturesque, however, from their situation, than from any great magnificence in the structure. Attached to it is a monastery, containing some fifty priests, who seemed proud of their possession, and anxious that visitors should admire it. The old father of this monastery was upwards of eighty years of age: they all complained of a great scarcity of food, as their livelihood consists in the offerings to the gods presented by the worshippers to the temple; and these, during the late troubles, had been differently employed. It was agreed at the time that something should be done to endeavour to minister to their relief, but some weeks afterwards, other parties of military visiting the same place, found that starvation had driven many from their hold, and the poor father was fast travelling to his long home from the want of the necessaries of life.

Our author sailed with the expedition to the mouth of the Peiho, and here landed with Captain Elliot, who had been invited to an interview with the commissioner, Kea'shen. Two miles from the town they were met, agreeably to the etiquette towards visitors of rank, by a mandarin junk, on board of which were two officers, one with the red button in his cap, who was the general of the emperor's Tartar body-guard, and the other, a blue-button mandarin, holding some rank in Kea'shen's household.

They entered our boat, says our author, and handed round their agate snuff bottles, and soon became quite familiar. Blue-button was particularly communicative, asking our names and different professions, and informing us of his own military deeds; and in a private communication he acknowledged that in "the secret chamber" he sometimes indulged in the opium pipe. Red-button, however, who seemed of a more morose disposition, frequently called him to order, as if he feared some disclosures from his talkative propensities.

At the landing-place a bridge of boats had been constructed for our use across the mud-flat; and a narrow pathway, leading some hundred yards from the shore, brought us to an encampment, which had been thrown up for the reception of the mission.

A blue screen was placed at the entrance, so as to hide the interior from the gaze of the public; and here we were met by many more mandarins, and marshalled into the presence of Kea'shen; he rose at our entrance, and received the mission with great courtesy and civility. Indeed, the manners of these high mandarins would have done honour to any courtier in the most polished court in Europe. He begged us to remain covered, and was introduced to each person separately, and expressed his hopes that the supplies had been received by the squadron. He made some excuse for our reception in the tents, but intimated that Tarkou was some distance from the landing place. Judging from appearance, he might have been a man of forty, and looked, what he is said to be by his countrymen, a person of great ability: his tail, the Chinese appendage to men of all ranks, except priests, was remarkable for its length and the care that was evidently bestowed upon it. He was dressed in a blue silk robe, with a worked girdle: on his legs were the white satin boots common to all the higher orders: his head was covered with a mandarin summer cap, made of fine straw: in it was placed the deep red coral button, denoting the rank of the wearer, and the peacock's feather, drooping between the shoulders. On the whole, his dress was plain, but the mandarins when in full costume, judging from specimens taken at Chusan, must have a very gorgeous appearance.

The encampment was surrounded by a high canvass wall, resembling that which encircles the private apartments of great men and native rajahs, when travelling in India. Inside this screen were eight small tents, in each of which a table and forms were placed. These formed an oval, and in the centre was erected a canvass cottage, of rather an ingenious description, whilst at the upper end, concealed by another screen, stood the tent of conference. This was lined with yellow silk (the royal colour) and worked with the arms of the empire at the back.

The interpreters and Captain Elliot remained with the commission, whilst the rest of the officers and gentlemen sought the tents around, in which the lower order of mandarins were busy preparing a breakfast for the party; for it was an extraordinary thing in this visit, that everything was apparently done by mandarins—none of their servants being admitted.

The meal consisted of numerous little plates, piled one upon the top of the other, containing birds'-nest soups, sea-slugs, sharks' fins, hard-boiled eggs, whose interiors were far advanced to chickenhood, and dressed fish: these were the greatest delicacies. This is but a small portion of the supply, for at the table where I had the honour to partake of the *good fare* there were no less than thirty of these little saucers. These breakfasts were spread in the different tents, and each was intended to stay the ravenous appetites of five barbarians.

Some time afterwards, when the expedition had sailed further south, some mandarins came off to the ship and breakfasted with the admiral. It was surprising to see the enormous quantity of food they devoured; and one who was of an immense size, weighing upwards of thirty stone, upon being questioned as to his powers of consumption, acknowledged, with a degree of vanity, that a sheep was his ordinary allowance for three days, nor did he seem at all satisfied with his morning meal. The Chinese, like the natives of India esteem size and bulk, as they imagine such an exterior a sign of wealth and power, and respect it accordingly.

We were much struck at the immense bodily strength and power of the northern Chinese, particularly of the men who were employed tracking the boats upon the river, who, although seemingly a wretched class, more like beasts of burden than human beings, are possessed of such physical powers that six or eight of them will drag against the stream, and with apparent ease, a boat of considerable tonnage.

A full account of those singular people, the Chinese boat-trackers, has already been given in our sixth article on the *Manners and Customs of the Chinese*, Vol. X., p. 82.

A FRIEND of mine, while shooting wild-fowl with his brother, was attended by a sagacious Newfoundland dog: in getting near some reeds by the side of a river, they threw down their hats, and crept to the side of the water, where they fired. They soon afterwards sent the dog for their hats, one of which was smaller than the other. After several attempts to bring them both together in his mouth, the dog at last placed the smaller hat in the larger one, pressed it down with his foot, and then brought them both together. This fact need not be doubted. These individuals have both at different times assured me of its truth. I know an instance somewhat similar. A spaniel was endeavouring to bring a dead hare to his master. After several ineffectual efforts to carry it in his mouth, or to drag it along, he contrived to get all the feet of the hare in his mouth, and in this way conveyed it to his master.—JESSE.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, ONE PRICE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 596. OCTOBER 16TH, 1841. Price One Penny.

THE BANKS OF THE THAMES. VIII

HAMPTON COURT.

Let any wight, (if such a wight there be,)
To whom thy lofty towers unknown remain,
Direct his steps, fair Hampton Court, to thee,
And view thy splendid halls: then turn again
To visit each proud dome by science praised,
"For kings the rest," (he'd say,) "but thou for gods wert raised."

J. P. ANDREWS, *after* GROTIUS.

CARDINAL WOLSEY, like many other ambitious men, hastened his own downfall by making too obtrusive a show of the power and wealth which his ambition had acquired for him. York Place, (since known as Whitehall,) and Hampton Court Palace, were instances of this uncontrolled love of splendour. Both belonged to the Cardinal, both were fitted up with almost unprecedented splendour, and both passed from the hands of this miscalculating man to those of the wily monarch from whom he had obtained all his power and wealth.

Soon after the Cardinal came into possession of Hampton Court Palace, it is said that he fitted up no less than two hundred and eighty silken beds, with suitable hangings, for the accommodation of visitors. In 1526 Wolsey thought it expedient to present the palace to Henry the Eighth; and that monarch resided in it occasionally, especially towards the end of his reign. Edward the Sixth was born in the palace; and the subsequent sovereigns, Mary and Elizabeth, frequently visited it. At the commencement of the reign of James the First the conference was held at Hampton Court, from which resulted the new translation of the Bible, and certain alterations in the Litany. Charles the First occasionally resided at Hampton, but rather as a prisoner than as a free monarch. Cromwell made it one of his residences, and the scene of his daughter Elizabeth's marriage with Lord Falconberg. Charles the Second, and James the Second, passed a portion of their time in the palace; and William rebuilt the state apartments and some other parts of the edifice. From that time the palace has not been occupied as a royal residence, except for a short time by the Prince of Orange, to whom the use of it was granted in 1795 as an asylum, after he had been compelled to quit his own dominions. The principal domestic parts of Hampton Court are now occupied by different private families, on whom grants for life have been conferred by the Crown.

It appears probable that the original plan of Hampton Court Palace comprised five open courts or quadrangles, all surrounded by buildings; but after the alterations which it has since undergone, it is now composed of but three. The approach to the house is from the west, which side contains ranges of subordinate apartments and offices; the entrance to these is by a plain gateway, and at each extremity of the west front is an octangular brick turret. Within this outer portal is the first court, about a hundred and seventy feet by a hundred and forty, surrounded on all four sides by buildings of more or less elegance; among which is the west end of the Great Hall, presenting, with its large rich window, the impressive resemblance of a venerable chapel. The passage to the middle quadrangle is by a groined archway, finely ornamented. This court, which is somewhat smaller than the outer one, is bounded on the west by a range of buildings in which is the reverse front of the portal leading from the first court; on the east by another range in which is a fine oriel window, and a very rich portal flanked by turrets; on the south by a colonnade

of the Ionic order, designed by Sir Christopher Wren, but scarcely harmonising with the rest of the building; and the north by the Great Hall, one end of which is seen in the outer court.

The Great Hall is more than a hundred feet long, by forty wide, with an elegant gable window at each end. The sides are lighted by seven lofty windows, placed at a considerable height from the ground, as was customary in old halls, to afford space for the tapestried hangings beneath. At the upper end of the Hall is a dais or platform, and on one side of it a window of most exquisite workmanship, on one pane of which the Earl of Surrey wrote, with a diamond, some lines to the "fair Geraldine." The roofing of the Hall, which is of oak, is open-worked, and so exquisitely carved as to produce a general splendour of effect that almost approaches to sublimity.

It is impossible to visit this Hall without carrying the imagination back to the time when Cardinal Wolsey held here his more than regal banquets. Mr. Jesse tells us, on the authority of the chroniclers of those days, that Wolsey's household consisted of one thousand persons, and that the arrangements of the palace were consistent with the due and even luxurious accommodation of this large number. In the Hall there were three boards or tables, presided over by three officers, one a steward (a priest,) another a treasurer, (a knight,) and the other a comptroller, (an esquire;) also a confessor, a doctor, three marshals, three ushers of the hall, and two almoners and grooms. The officers of the Hall kitchen, of the private kitchen, and of the state apartments, were so numerous, and classified in such an exact manner, that we cannot attempt to enumerate them; suffice it to say that all these were daily fed in the Hall; one table being for lords of the household, another for gentlemen, and others for the inferior degrees.

Cavendish, Stow, and the other chroniclers of past time, have dwelt with minute wonder on the magnificent entertaiments given by Wolsey in this Hall. One in particular, given to the French ambassadors sent over at the conclusion of a peace in 1528, was specially noted: the lord mayor entertained them in London; the king feasted them at Greenwich and at Richmond; but Wolsey's banquet at Hampton far exceeded the others. The rich hangings of arras, the massive silver and gold plate, the regiments of tall yeomen in gay liveries that waited upon the guests, the glare of the torches, the costliness and excellence of the wines, the savour of the meats, and the superabundance of everything, are all descanted on by Stowe with great minuteness. The Cardinal, we are told, did not enter the Hall till the end of the first course, (perhaps to show his importance,) but after he had welcomed the guests, and taken his seat, the banquet proceeded.

Anone came up the second course, with so many dishes, subtleties, and devices, above a hundred in number, which were of so goodly proportion and costlie, that I think the Frenchmen never saw the like. The wonder was no less than it was worthie indeed. There were castles, with images the same as in St. Paul's Church for the quantity, as well counterfeited as the painter should have painted it on a cloth or wall. There were beasts, birds, and personages, most lively-made and counterfeited, some fighting with swords, some with guns and cross-bowes, some vaulting and leaping, some dancing with ladies, some on horses in complete harnesse, jousting with long and sharp speares, with many more devices. Among all other was a chessboard, made of spiced plate, with men thereof the same; and for the good proportion, and because the Frenchmen be verie expert in that play, my Lord Cardinall gave the same to a gentleman of France, commanding there should be made a goodlie case for the preservation thereof in all haste, that he might convey the same into his country. Then took my lord a boule of gold filled with ippocrass, and putting off his cappe, said, "I drink to the king my soveraign lord, and next unto the king your master," and therewith drank a good draught. And when he had done, he desired the grand master to pledge him, cup and all, the which was well worth five hundred marks, and so caused all the lords to pledge these two royal princes. Then went the cups so merriely about, that many of the Frenchmen were fain to be led to their beds.

But we must leave the Hall and its festivities. The third quadrangle of which the palace consists, usually called, from the fountain in the area, the Fountain Court, consists chiefly of buildings constructed by Sir Christopher Wren in the reign of King William the Third, at the time when the south and east sides of the old palace were taken down, and the present state apartments in those divisions erected. The north and west sides were left standing, but were externally renovated to correspond with the new buildings. The court measures more than a hundred feet in each direction; and on each side is a beautiful colonnade of the Ionic order, with duplicated columns.

On the northern side of the Fountain Court is the Chapel. It is paved with black and white marble, and fitted up with oak, elaborately carved in many parts by the celebrated Gibbons. The roof is of a Gothic pattern, with elaborately-worked pendant ornaments. Before the civil war this chapel was ornamented with stained glass and pictures; but at that disturbed period, we are told that—

Sir Robert Harlow gave order (according to the ordinance of Parliament,) for the putting down and demolishing of the popish and superstitious pictures in Hampton Court, where the altar was taken down, and the table brought out into the body of the church, the rails pulled down, and the steps levelled, and the popish pictures and superstitious images that were in the glass windows were also demolished, and order given for the new-glazing of them with plain glass; and, among the rest, there was pulled down the picture of Christ nailed to the cross, which was placed right over the altar, and the pictures of Mary Magdalen and others, weeping by the foot of the Cross; and some other such idolatrous pictures were pulled down and demolished.

The east and south fronts of the palace, comprising the state apartments, form two extensive piles. The eastern, three hundred and thirty feet in length, is chiefly built of bright red bricks, but with decorations of stone; the central compartment, in which is the state entrance to the palace, is of stone, and highly embellished. The south front is about the same length as the eastern, and has, like it, a central compartment of stone, but is not so highly embellished; it looks over the gardens; and the ground was here sunk ten feet, for the purpose of obtaining a view from the lower apartments. The numerous state apartments are of magnificent dimensions; and they, as well as other apartments in the palace, are splendidly fitted up, and adorned with pictures by the first masters.

The most valuable treasures of art in the palace are unquestionably the Cartoons of Raffaelle, which are known, at least by name, to most readers. They were drawings (cartoons) intended as copies for tapestry; and done by Raffaelle, rather more than three centuries ago. When they were sent to Arras, in order that tapestries might be worked from them, the weavers cut each of them perpendicularly into six or seven slips, in order to work more conveniently. The tapestries thus produced were admired and exhibited at Rome; while the inestimable patterns or cartoons lay in oblivion in a cellar at Arras for a whole century. At length Charles the First, at the suggestion of Rubens, sought them out; when it was found that several of them were torn to fragments or otherwise destroyed; there being only the slips of seven of them remaining in an entire state. Some years after this, William the Third caused seven stretching-frames to be made, secured the slips carefully in their respective places to form the original pictures, and built a room for their reception at Hampton Court Palace, where they still remain. Propositions have at some periods been made to remove them to London, where they could be

more seen and appreciated: but it is feared that the effect of the metropolitan atmosphere on the water-colours, in which they are painted, would be unfavourable, while the Cartoon Gallery is allowed to be well-adapted for their reception. The subjects of these cartoons are as follow:—1. The Death of Ananias. 2. Elymas the Sorcerer struck blind by St. Paul. 3. The Lame Man restored by Saint Peter and Saint Paul. 4. The Miraculous Draught of Fishes. 5. Saint Paul and Saint Barnabas at Lystra. 6. Saint Paul preaching at Athens. 7. The last charge to Peter. We may remark, that, on the sale of the collection formed by Charles the First, the cartoons were secured at the price of 300*l.* by Cromwell, whose known determination to possess them prevented competition; but not long afterwards he obtained a loan of 50,000*l.* on them from Holland, which sufficiently indicates the estimation in which they were held.

Of the very large collection of pictures by distinguished masters, contained in different apartments of the palace, we have not room here to speak; but we must give a passing notice of some singular tapestries in a room called Wolsey's withdrawing-room. This room is entered by a doorway from the centre of the dais in the Hall. It is about sixty feet long, thirty wide, and twenty high. The ceiling is decorated with pendent ornaments, between which are fleurs-de-lis, roses, portcullises, coats-of-arms, &c. The ribs are of oak, and were formerly elaborately painted and gilt; they are divided into compartments, and from them small pendants descend as at the intersections. Around the room are a series of tapestries worked by Flemish artists, and placed in their present position by Cardinal Wolsey. Of these tapestries Mr. Jesse remarks:—

With all their drawbacks, these tapestries possess qualities which the real artist and connoisseur will immediately recognise as worthy of study and attention. The vigour of some of the groups and single figures, the expression of many of the heads, the feeling for simple and often elegant form, and also the exceeding grace and beauty of disposition and arrangement of many of the draperies, to say nothing of the bold, though it must be admitted, often strange conception of the allegories—afford fair compensation for many defects which arise out of ignorance of, or want of practice in, true drawing, and the absence of a grander and purer style.

The pleasure grounds attached to the palace are laid out in the formal Dutch taste; and in a garden called the private garden is the celebrated grape-vine, a hundred and ten feet long. This vine was planted more than seventy years ago; and it has been known to yield in one season two thousand two hundred bunches of grapes weighing on an average one pound each. A park, nearly five miles in circumference, is situated near the river; and in it is a canal half a mile in length bordered with fine lime-trees. A labyrinth or maze, on the opposite side of the palace, is one of the objects which, taken in conjunction with the various other attractions of the place, make Hampton Court one of the pleasantest jaunts to the visitor which the "banks of the Thames" can afford. At this part of our noble river the scenery on both banks has always been celebrated for its beauty.

. . . . Children we are all
Of one great Father, in whatever clime
Nature or chance hath cast the seeds of life,
All tongues, all colours: neither after death
Shall we be sorted into languages
And tints, white, black, and tawny, Greek and Goth,
Northmen, and offspring of hot Africa;
The All-Father, He in whom we live and move,
He, the indifferent Judge of all, regards
Nations, and hues, and dialects alike;
According to their works shall they be judged,
When even-handed Justice in the scale
Their good and evil weighs.—SOUTHEY.

THE ECONOMY OF MARINE LIFE.

APART from the local advantages to such people as those of the Channel Islands—who use it as fuel and as manure—of stranded sea-weed, there is a principle, connected with the fact of its coming ashore, which it is necessary to understand before one can examine the sea with due knowledge of the economy of that extraordinary element. It is a fact, palpable to any one's observation, that all the coasts of the land, composed of mineral substances, or of dead shells, or other animal productions, or vegetable ones in which life is extinct, are habitually wetted by the ocean waters, to the full extent that these waters act upon them. It is also a fact, well known to those acquainted with the economy of nature, but not so palpable to common observation in those who do not attend to the principle of things, that no living production of the sea, or any other water, is wetted by that water while it remains in the living state. This is known to be the case in all waters, however soft and limpid they may be, or however mixed with saline and other active substances; and it is also known that the more such substances exist in the composition of any water, whether of the sea or of any other collection, the more completely are the living inhabitants of that water, animal or vegetable, protected against its action upon the surface of their bodies. The substance which nature employs for this purpose is a mucous or slimy matter, of some description or other, in which the surface of the living being is habitually bathed, and by which it is completely protected from that macerating and decomposing influence, which the water, whether salt or fresh, would otherwise exert upon it, and in so far operate its destruction; in the same manner as water very speedily decomposes the greater number of organized substances after they are dead.

The most remarkable and important relation between the waters of the sea and the dead and living inhabitants of that element, is not, however, the circumstance of the living productions and inhabitants elaborating a mucous or slimy production, by which the wetting is prevented, and which applies not only to aquatic plants and animals covered with soft skins, but even to the most compact of the porcelain shells, which, when living, are invested with a kind of membrane, often of extreme tenuity, which possesses the same quality. The curious part of the matter is, the difference of their relation in the sea to a substance which can be wetted by its waters, and to one which cannot be so wetted. The wettable substance finds its way to the wettable shore by an obscure but by a very certain and constant kind of attraction; and the substance which the water of the sea cannot wet has no such tendency to come on shore, but remains to perform its functions in the water. No matter whether it is marine plant, marine animal of any kind whatsoever, or aquatic bird which frequents the waters without habitually living in their volume; for if the plant or the animal is fitted by nature for living in the sea, there is no surface-action of the sea upon it as long as it is in the living state; and it consequently has no tendency whatever toward the shore. But when either plant or animal dies, and ceases to perform its functions, including the production of the water-repelling mucus among the rest, it is immediately subjected to the economy of the waters, just as if it were a dead thing; and then the action of the sea casts it on the shore, as having no longer connexion with the energy and economy of living nature there. This is the cause of the vast accumulations of shells with which we meet on various shores, and on some of the shores of the Channel Islands among the rest; and it is also the reason why that sea-weed, which is so valuable to the Channel Islanders, comes ashore in considerable quantities, after those violent disturbances of the ocean waters which have torn it from its natural situation as a living vegetable, and transferred it over to those dead products which the sea invariably casts upon the strand, as being no longer useful in its very varied economy.

If the people of the Channel Islands were fully aware of this peculiar property of dead sea-weed, it might save them no small portion of their labour at those times of the year when the time arrives to cut and carry this weed as a very necessary article of their provision, both domestic and agricultural. If they were simply to cut it down—that is, to sever it from the tentacula or roots by which it adheres to the rocks without deriving any nourishment from them—then it would not go out to sea, but would be collected in the bays in the creeks to probably the same extent as now, and with a great reduction of labour to those whom it is valuable as an article of domestic economy.—MUDIE.

BRUNELLESCHI, AND THE CATHEDRAL OF S. MARIA DEL FIORE, AT FLORENCE.

If we date from the death of Justinian the entire disappearance of the system of, and the taste for, the architecture of Greece and Rome; and if we pass over the long and gloomy period wherein the fairest works of antique art were a prey to the ravages of the Northmen, we shall find that Italy prepared the way for the restoration of good taste, and that Filippo Brunelleschi was the first to prepare the way for its reception.

This illustrious Italian, born in 1375, was descended from an ancient Florentine family: his father was a notary, to which profession young Filippo was destined. He received a good education, but his father observed with some dissatisfaction that his son was more attached to the ingenuities of the hand than to the culture of the head; and in despair of making him excel in literature and law, he placed him with a goldsmith, an art which was then in great repute, since it was intimately connected with the finest of the arts of design, which the ornamental taste of the Roman Catholic religion fully developed and encouraged.

Our young artist became captivated with the charms of sculpture, which taste was encouraged by an acquaintance with the afterwards celebrated sculptor Donatello. Filippo also studied with great assiduity the sciences of geometry, optics, and mechanics; and his young and ardent fancy looked forward to architecture, as the subject on which his genius was to display its full power; so that, when Donatello was about to visit Rome for the purpose of studying sculpture, Brunelleschi determined to accompany him to gaze upon the architectural monuments of antiquity, which at that time were not only forgotten in Rome, the place of their birth but the principles upon which they were constructed were unknown to the whole world.

It is one of the grand properties of genius to see clearly that which to other eyes is obscure. Many of the professors of art and science, in their numerous important and extensive departments, are undoubtedly men of great and exalted talent; they follow in the path of their predecessors, and simplify and improve our knowledge; but the man of genius does more than this; he penetrates deep into the mysteries of nature, removes the veil which prevents other men from seeing farther, opens new fields of research, discovers hidden principles which are new, or explains and brings out into the light of day such as have long been lost.

When Brunelleschi arrived at Rome he was lost in surprise and admiration at the sight of so many architectural wonders, which in his day existed in a better state than at present. The world is five centuries older than when our young architect first sat down among the ruins of imperial Rome. His wonder seems to have bewildered him; so that it required a long time before he could acquire that sober state of mind necessary for the study of these wonderful models. Even then he is said to have forgotten the commonest offices of life,—the hours of repast and of sleep. He was constantly constructing plans,—measuring antique edifices,—obtaining exact proportions,—and endeavouring to establish the true characters of the three orders, so as to arrive at that system of reason, intelligence and harmony which was to re-establish and perpetuate the authority of his principles. The ambition of becoming the restorer of ancient architecture sustained his courage and excited his ardour; his pecuniary resources were exhausted, but his profession of goldsmith supplied him with daily bread: his enthusiasm in the cause of architecture was genuine:—it was not of that weak and flimsy nature which wears itself out in protestations of what it *will do*:—his was the "deep stream which bubbles not:"—it sources were concealed within himself, and they were not communicated even to his intimate friend Donatello, who returned to Florence, leaving Brunelleschi at Rome amid the ruins of past grandeur.

We come now to notice the work upon which the fame of Brunelleschi chiefly rests. The grand Basilica or the Cathedral of Santa Maria del Fiore at Florence was commenced by Arnolfo di Lapo, about the year 1295, a few years before his death. It appears that Arnolfo, in the conception of a vast plan, intended to cover the spacious octangular area between the four branches of the cross with an immense vault. This, however, is only conjecture; since the architect did not leave behind him any plan for inclosing this enormous space. He and his contemporaries had no knowledge of the resources of Greek and Roman architecture; and the knowledge and skill of the time did not warrant such an undertaking as this gigantic dome. The only person who at all favoured the practicability of such a scheme was Brunelleschi, whose secret ambition when at Rome, was to erect this great work without any centering, or internal support from carpentry work, but, taking as a point of departure, the summit of the nave, to build his vault in stone, and to make its elevation proportionate to the rest of the edifice. At that time such a project as this was thought to be wild and visionary.

Brunelleschi wanted only a little more knowledge in the art of construction. He again applied himself, and interrogated the monuments of antiquity: he looked into these works for the reasons of their solidity; the means whereby they were executed; the relations of their masses; the processes whereby the materials were worked; the secrets of their union and of their transport and position; the mechanical laws whereby to calculate forces and resistances; the boundary line, in short, between boldness and temerity.

In 1407 Brunelleschi returned to Florence. In this year the most eminent architects and engineers were convened from all parts to deliberate on the best means for completing the cathedral. Many formidable difficulties were opposed to the construction of a single vault, and there was no existing building which could be taken as a precedent. The dome of Sancta Sophia was somewhat smaller in diameter than the one now proposed: this one, together with that of St. Mark's at Venice and the cathedral at Pisa, was constructed under such very different circumstances as to afford little practical information to bring to the construction of the new dome. Brunelleschi, however, had solved the difficulty. He appeared at the meeting, and with great sagacity and self-restraint, revealed a part only of his plan. He foresaw that the exposition of the whole of it would have the effect of placing those weapons in the hands of another which he felt himself destined to yield. He advised, therefore, that the substructure of the future cupola should be commenced, and certain other precautionary measures used, until the final decision of the meeting should be made. This advice was agreed to, and the plan recommended by him was put into practice.

Delighted thus to have imparted the first impulse to this great work, he devoted many months to the construction of his models. A second meeting of architects and engineers was convoked, in order to arrive at a final decision, when Brunelleschi suddenly quitted Florence and went to Rome.

And here is another remarkable feature in the mind of this extraordinary man. He calculated upon the weakness of human nature: knowing that men often seek eagerly after that which is afar off, and as it were inaccessible, but which, if close at hand, and easily obtainable, they too often despise, he calculated that his services would be the more appreciated in Florence, when they must be sought after in Rome. Nor was he deceived, for scarcely had he departed when his absence

CATHEDRAL OF SAINT MARIA, AT FLORENCE.

from the meeting was severely felt. The judges recalled to mind the superiority of his arguments and of his knowledge, and the ascendancy which he had assumed and maintained in the first conference over all his competitors. They sent to him, and told him that the fate of the enterprise depended on him, and begged him to hasten his return. Brunelleschi did return: he appeared again before this assembly, and saw that it was composed of men made timid rather by the feeling of their own inexperience and insufficiency for the task than by their knowledge of its difficulties. The time was wasted in vain discussions and timid propositions. Brunelleschi sought neither to augment their fears, nor too much to diminish them. He spoke to them as follows:

I will not conceal from you the magnitude of the difficulties belonging to the project which occupies our attention. It is the peculiarity of great things to be difficult. I think I see, even now, obstacles greater in character and in number than you perhaps have imagined. I doubt whether the ancients would ever have dared to construct a vault of such tremendous magnitude as the one we now propose to raise. I have long meditated on the means for so adapting both the internal and external construction of it as to insure success; but the peculiar form and the great height of the edifice scare me. If our vault were circular I would resort to the method adopted by the ancients in the Pantheon or Rotunda. But here we have eight facets, and consequently eight upright courses of stones to elevate, which we must unite with the rest of the structure; thus the affair becomes more difficult, and no one can be better assured of the difficulty than myself. God forbid, however, that I should despair. Who can doubt that the Great Author of all science, to whose honour this magnificent temple is erected, will not confer strength, intelligence, and genius on him who shall be selected for this undertaking? As for me, who am not commissioned to this work, how can I be useful to you? If the matter rested on me alone I confess that I should feel courage, and doubt not of finding the means of success, without encountering so many difficulties. But how can I reveal to you these means, since you have as yet decided on nothing? My advice is, that if you wish determinedly to proceed with the execution of this grand design, you be not content with what I may propose, but that you assemble here from all parts of Europe the most skilful masters of the art, submit to their searching deliberation all the points of difficulty, and then decide finally in favour of him who shall propose the most simple and effectual plans, and announce them with the greatest rectitude of mind and judgment.

Thus artfully did Brunelleschi argue. His advice was adopted, but he refused to show his model. Clever as a tactician, as well as profoundly skilful as an architect, he sought by concealing himself from curiosity to excite it the more. He pleaded business at Rome, and thus eluded the premature offers made to him. He set out on this third expedition, in order to gain a fresh accession of strength among the models of antiquity for the great trial which he himself had provoked. Here we must leave him, and conclude the subject of this notice in a future article.

ON CHESS. No. XIX.

ON THE POWERS OF THE PIECES AND PAWNS,

(Concluded.)

ANOTHER variation of value arises from the following circumstance:—Suppose a bishop to be at one end of a diagonal line of squares cleared of pieces: a queen or rook could not be placed on any square of that diagonal without being *en prise*, a circumstance which, from their superior value, would be avoided, whether they were supported or not. Also a bishop, knight, or pawn could not be placed on that diagonal, without capture, unless supported. A similar power is possessed by the other pieces, and may be thus expressed:—if a piece commands a certain range of squares, the opposite party cannot place on any square of that range a superior piece, or an unsupported equal or inferior piece, without immediate loss. It will be observed, that this is not the power of moving along a line of squares, but of preventing the antagonist from occupying any square of that line without loss. Supposing the board to be about half-cleared of men, the power of the relative pieces in thus preventing the opponent from occupying any square in a particular line, has been calculated to be

Pawn ... = 2
Knight ... = 5½
Bishop ... = 7½
Rook ... = 10½
Queen ... = 17

But if we now omit all hostile proceedings, and consider simply how many squares a piece may command, without taking any opposing piece, we arrive at different results, principally because the pawn moves straight forward when merely making a move, but diagonally when capturing. The proportionate number of optional squares within the reach of the piece at one move,—supposing the board, as before, to be about half-cleared of combatants,—have been calculated at

Pawn ... = 1
Knight ... = 5
Bishop ... = 7
Rook ... = 10
Queen ... = 10½

Suppose we wish to attack a particular piece with one of our own. If ours happen to be a pawn, we can do so by moving it to one square only; but if it be a bishop, the diagonals may be so far clear as to allow of our doing it in either of the directions. Place the black king on his own square, and the antagonist white bishop on its queen's bishop's 2nd.: the bishop can give check at two different squares. With the king in the same position, and the antagonist rook on its own square: the rook can check at two different squares. With the black king in the same position, place the white queen on her bishop's second: she can check at six different squares. Place the white knight on his king's fourth; he can check the king on two squares. In all these cases, we suppose the attacking piece to be free from any obstruction, either from an ally or an antagonist. From this enumeration of powers it is seen, that when a particular piece is to be employed to make an attack on a particular antagonist piece, it may often be done on more than one square. But as the intervention of other pieces would in some degree prevent this from being done, and as the presence of other pieces blocks out some more than others, according to their different modes of movement, we have hence a new scale of powers. The comparative power of the different pieces, in choosing what point to select as a position of attack, has been estimated at

Pawn ... = 2
Knight ... = 6
Bishop ... = 6½
Rook ... = 11
Queen ... = 24

Let us assume that a piece is actually attacked. In order to save it, one of three things must be done:—1st., to capture the attacking piece: 2nd., to interpose another piece: 3rd., to remove. Now different pieces have these several powers in different degrees; and to compare them it will be convenient to suppose that the attacking piece cannot be captured without loss: there will then remain two modes of releasing the piece. If the attack be made by a pawn, nothing can be interposed, since the belligerent pieces are close together: the assailed party has, therefore, nothing to do but to remove to a more distant square. If the attacking piece be a knight, no interposition will ward off the attack; on account of the peculiar privilege of this piece in leaping over other pieces. If a bishop attack a rook, interposition will not save it, because the bishop may take the interposed piece, without being re-captured by the rook; this arises from the circumstance that the rook has not the *diagonal* power of the bishop: removal is the only way of saving the rook. For a somewhat similar reason, if a rook attack a bishop, no interposition will save it, because the bishop and the rook move in different ways:—interposition is, therefore, of no avail. In all these examples it is assumed that the attacked and the interposed pieces are not supported or defended by others. From a minute calculation of the various kinds and degrees of this power, it is found that the *dislodging faculty*, or the power of an assailant to compel the removal of an assailed piece, is greater in the pawn and the knight than in the other pieces in comparison with their generally inferior power, being in the ratio of

Pawn ... = 0·8
Knight ... = 2·8
Bishop ... = 1·0
Rook ... = 2·9
Queen ... = 4·7

From the circumstance of a pawn being capable of promotion to the rank of a piece, its value is greater than it would be if that privilege were denied; and as it alone is capable of this sudden increase of power, the ratio of its value when compared with the pieces, is higher. The pawn has likewise an increase of comparative power resulting from its use as a *support* for a superior piece. If a piece make an attack on another of inferior value, a pawn may be as effectual a support for the latter as a superior piece would be: this circumstance also increases the ratio of the pawn's power. On the contrary, if two pawns become, by capture or exchange, placed one behind the other, or "doubled," the power of the hindmost one is much decreased, particularly if on the rook's file; so much, indeed, that the two together are deemed not to be worth more than one pawn and a quarter under usual circumstances. Another circumstance which modifies the power of a pawn is the contiguity or not of another pawn on the adjoining file; if a pawn is isolated, that is, if neither of the adjacent files is occupied by a pawn, the pawn's value is below the average hitherto expressed; but if it be supported by pawns on both the contiguous files, its value is greatly enhanced. These details show how much the value of a pawn depends on position.

Lastly, there is a difference of power in different pieces in giving checkmate to the adverse king. When the king has no pieces or pawns left for his defence, the attacking pieces show degrees of power very different from those which they possess in the usual course of the game. A rook is of almost infinite value compared with a bishop or a knight; for while the former, acting in conjunction with the king, may give checkmate, and must do so if proper care be taken, a knight or a bishop cannot. Under such circumstances a rook is nearly as valuable as the queen, for the latter has now a surplus amount of power which cannot be brought into use; and checkmate is given nearly in the same way by the rook as by the queen, only rather more slowly.

The reader will now be in a condition to understand, from this brief and necessarily imperfect sketch, how many circumstances must be taken into account before we can correctly estimate the relative value and power of the combatants in the chess battle-field. In order to elicit something like a practical rule which may be valuable in play, all the several lists which we have given, and a few more besides, are added together, and the total balance of each power compared with that of the others. The values of any particular piece, in moving over the open board—in moving over a board about half cleared by play—in keeping off an antagonist from a particular set of squares—in making an attack on two or more different squares—in dislodging an antagonist from a particular square—in giving mate without the aid of other pieces, &c.,—are added together: this is done for each piece; and finally, the whole are reduced to smaller numbers by making a pawn = 1. The final relative values then are as follows;—

Pawn ...	= 1·00
Knight ...	= 3·05
Bishop ...	= 3·50
Rook ...	= 5·48
Queen ...	= 9·94

As, from the nature of the game, the king is invaluable, since he is never exchanged or captured, he is excluded from the computation. It will be seen, from this list, that a knight is worth about three pawns; and that a rook is worth a bishop and two pawns, or five pawns and a half. There appears to be nearly half a pawn difference of value between the knight and the bishop; but the most experienced players are generally willing in an indifferent part of the game, to exchange one for the other, thereby implying that the two are valued equally. This would appear to show that the computed values are not quite correct; but the discrepancy has been explained in a remarkable manner. Suppose a bishop and a knight to be on the board, but not immediately attacking each other. Take the average state of the board, and the bishop could attack the knight in a smaller number of moves than the knight could attack the bishop, arising principally from the knight being unable to act at a distance. This smaller number of moves is often sufficient to give "the move," the advantage of which in an average state of the game is reckoned to be equal to half a pawn: this value, added to that of the knight, would account for the superior value of the bishop.

The result arrived at in this manner is found to be sufficiently near to that which experience points out to the player, to merit attention; still the mode in which it is arrived at is too uncertain and conjectural to give it a scientific character. The time has not yet arrived for applying the rigour of mathematics to the game of chess, so as to demonstrate the excellence of one move over others, in the precise ratio of the powers possessed by the pieces. The great dependence of the player's success on *position*, independent of the *number* of his pieces, and the striking effect which the single move will often produce, have hitherto prevented any attempt to include the whole game in a system of mathematical laws. Until this can be done, we doubt whether chess ought to be termed a "science;" since we are accustomed to apply this term to those subjects only which fall under the influence of general laws or principles which are universally admitted.

God is a Spirit none can see,
He ever was, and e'er shall be:
His eye, with infinite survey,
Views every realm, by night or day.
What has been, is, or shall be done,
Or here, or there, to Him is known;
Nor can one thought arise, unseen,
In mind of angels, or of men.—Doddridge.

FATHER LONG-LEGS, (*Tipula rivosa.*)

Few of our readers, perhaps, are unacquainted with the slender, fragile insect popularly called *Father*, or *Harry Long-legs*. During the evenings of autumn they must have noticed its long and delicate limbs reposing on the shrubs in their gardens, or more probably they have witnessed its ineffectual struggles to extricate those feeble limbs from the spider's web, or from the alluring candle, towards which, in common with many other insects, it is too apt to hasten.

This insect is the largest of the European Tipulæ, being often more than an inch and a half in length, and possesses characters which are shared by the other species of that genus, and are sufficient to distinguish them from gnats and other somewhat similar insects. These characters are the length and trifling bulk of the body, the extent of the wings, and the length and slender form of the legs, which are also remarkably fragile, so that it is difficult to handle the insect without breaking them, and they even appear insufficient for the support of the body, which the insect balances, and causes to vacillate continually. This vacillation is attributed by Kirby and Spence to the weight of the body and the elasticity of the legs, and the object of it is supposed by them to be in some way connected with respiration. Rennie conjectures that this constant motion may be for the purpose of exercising themselves and of driving the fluids into their long legs, which may not be effected in the exercise of flying on account of their legs then remaining almost motionless. Another point by which the insects of this genus may be easily distinguished from gnats, is the mouth, which in Tipulariæ projects but little while in gnats it forms a long proboscis.

The larvæ of these insects vary much in their form and habits, some being terrestrial, others aquatic. In general they resemble elongated worms, with the body divided into rings; sometimes they are furnished with appendages performing the office of feet, in other cases they are entirely destitute of such aids to locomotion. The head is of an invariable figure, but in those of the larger species it is small, and usually concealed under the first ring. It is furnished with two fleshy horns, two hooks, and two scaly pieces: the last-named appendages serve to cut and bruise the aliment on which the larvæ feed. Their respiration is carried on by means of two stigmata, situated in the last ring of their bodies, which is considerably depressed. They live beneath the earth, at the depth of one or two inches, and are most abundant in wet pastures. Their food is said by most writers to consist of the softer kinds of vegetable substances, the fine fibres of roots, &c., but in the supplementary notes to Cuvier's *Insecta* it is stated that they feed on earth and soil, and that although they do not eat plants, yet, nevertheless, they do them much injury, because as they often change place, they raise and detach the roots, which they expose to be dried up by the sun. These larvæ are also found in the cavities of half-rotten trees, where they find a mould of a rich quality. They undergo their metamorphosis in the earth, and change there into the chrysalis state. In this new form they are of a greyish colour, and the rings of their bodies are covered with projections and spines inclining backwards. The organs of respiration are now situated on the head, and consist of two horns, differing in length according to the species. The use of the spines becomes evident as the time of the last metamorphosis approaches. By their means the larvæ push and raise themselves above the surface of the earth to the height of about half their body, and thus they await their final change. At length the skin of the chrysalis bursts open and releases the perfect insect, the elegant Tipula, to the enjoyment of life and liberty. It is during the month of September that this last change takes place, and at that time in situations such as we have described the perfect insects

are very abundant, walking upon the tops of the grass as if they were placed upon high stilts, or flying up in swarms into the air, with a faint but perceptible noise occasioned by the action of their wings. Latreille, in noticing the singular organs called balancers, or poisers, situated near the wings, in these and other dipterous insects, says, that they occupy the situation of the spines in bees and wasps, with spiracles in the same manner situated behind them, whence it is evident that the hinder part of the chest, where these balancers are, corresponds to the part which in the male cicada and the cricket contains the organs of sound. But from the observations of De Geer and other naturalists, it appears that the buzzing of insects is continued after they have have been deprived of these organs, therefore they can be in no way connected with the production of sound. The true use of the balancers is that which their name imports, and which is thus explained in the language of Derham; "If one of the poisers, or one of the lesser auxiliary wings, be cut off, the insect will fly as if one side overbalanced the other, until it falleth to the ground; so that if both be cut off they will fly awkwardly and unsteadily, manifesting the defect of some very necessary part. The use no doubt of these poisers and secondary lesser wings is to poise the body, and to obviate all the vacillations thereof in flight, serving to the insect as the long pole, laden at the ends with lead, does to the rope-dancer." Another naturalist (*Schelver*) is of opinion that the poisers are air holders, and affirms that without their aid the insect is unable to fly at all.

The attitude of the female in laying her eggs is very singular. Supporting her body in a vertical position by by means of her hind-legs, she thrusts the extremity into the earth and deposits one or more eggs in the hole thus made; she then moves forward without altering the position of her body, and proceeds with her task in a similar manner in another place. The ovipositor of this insect is well adapted to this method of working, as it consists of a sort of pincers of a horny consistence and sharp at the point. The eggs are small, oblong, a little curved, and of a shining black. Each female lays a large number of these eggs.

The larvæ of smaller tipulæ are found, some in cowdung, some in different kinds of mushrooms, and others in the water. A singular species infests the agaric of the oak, though it does not penetrate into the substance of the plant, but remains underneath it. The skin of this larva is humid, and it covers the places where it passes with a gluey coat, which it produces at its mouth. It forms a curious little nest or tent of the same material, and finally spins a cocoon of a conical figure, and with a rough surface, in which it incloses itself, and changes into a chrysalis. In this form it remains about fifteen days, when it emerges as a perfect insect.

The aquatic larvæ are numerous, and differ much from each other in conformation. Some of them live in holes in the banks of streams where the water reaches them; while others are more active in their habits and swim with great agility. Many inclose themselves in cases, formed of any available materials within their reach; in fact, these aquatic species have little in common but the stigmata, or breathing processes, the number of which is the same in all. In their chrysalis state they also vary nearly as much as in the first stage of their existence. Some remain entirely without motion at the bottom of the hole which the larva had inhabited, others swim and run with swiftness in the water. All are provided with respiratory organs, and apply them to the surface of the water to pump in the air. The insects produced from these larvæ are rather small, and are frequently mistaken for gnats.

In their perfect state the tipulæ are largely destroyed by birds, and yet their numbers are very great, as must be evident to most persons living in the country. The larvæ of the aquatic species also afford food to fish and to carnivorous aquatic insects.

There are several other species, besides the large insect already described (*Tipula rivosa*), to which we may briefly direct the attention of our readers. They are commonly spoken of as *crane-flies*. The garden crane-fly (*T. hortorum*) is rather smaller than *T. rivosa*, and is produced from a larva and chrysalis of a darker colour. The wings of this species are transparent, with obscurely marked whitish variegations.

Another very common species is *T. oleracea*, nearly similar in size to the preceeding. It has transparent wings with a dusky rib or upper edge. In the larva state some insects of this species were made the subject of an experiment by Mr. Stickney (as related by Kirby and Spence), in order to ascertain their power of resisting cold. Several of the grubs were exposed to a severe frost, till they were congealed into masses of ice, yet some of them survived.

Tipula cornicina is described by Shaw as being of a middle size, with transparent wings having a marginal dusky spot. The body is yellow, with three longitudinal dusky streaks. Its larva, which is found in meadows, &c., is brown, with a flattened, or truncated tail, beset with a certain number of radiating soft spines or processes, and the chrysalis is slender, and furnished, as in most others, with minute spines about its segments, by the assistance of which it is enabled to raise itself to the surface of the earth when its final change approaches. There are not many insects in this genus adorned with lively colours; *T. crocata* however, is of a polished black, with yellow rings round the abdomen.

One of the most familiar specimens of the smaller Tipulæ may be observed in great numbers on windows in the decline of summer. It is an elegant species called by Linnæus *Tipula phalænoides*. Its general length is about the tenth of an inch, and the wings, which are very large in proportion to the insect, are of an oval shape, and of a grey colour, mottled and variegated in an elegant manner with dusky specks. The edges of the wings are fringed with hairs, and under the microscope the whole insect presents a beautiful appearance.

Another species is called *T. plumosa*, from having plumed antennæ. It is of the size of the common gnat, and is one of those aquatic species already mentioned as so greatly resembling that insect.

It is a curious fact, that children are the best judges of character at first sight in the world. There is an old Scotch proverb, "They are never cannie, that dogs and bairns dinna like;" and there is not a more true one in the whole collection.—James Hogg.

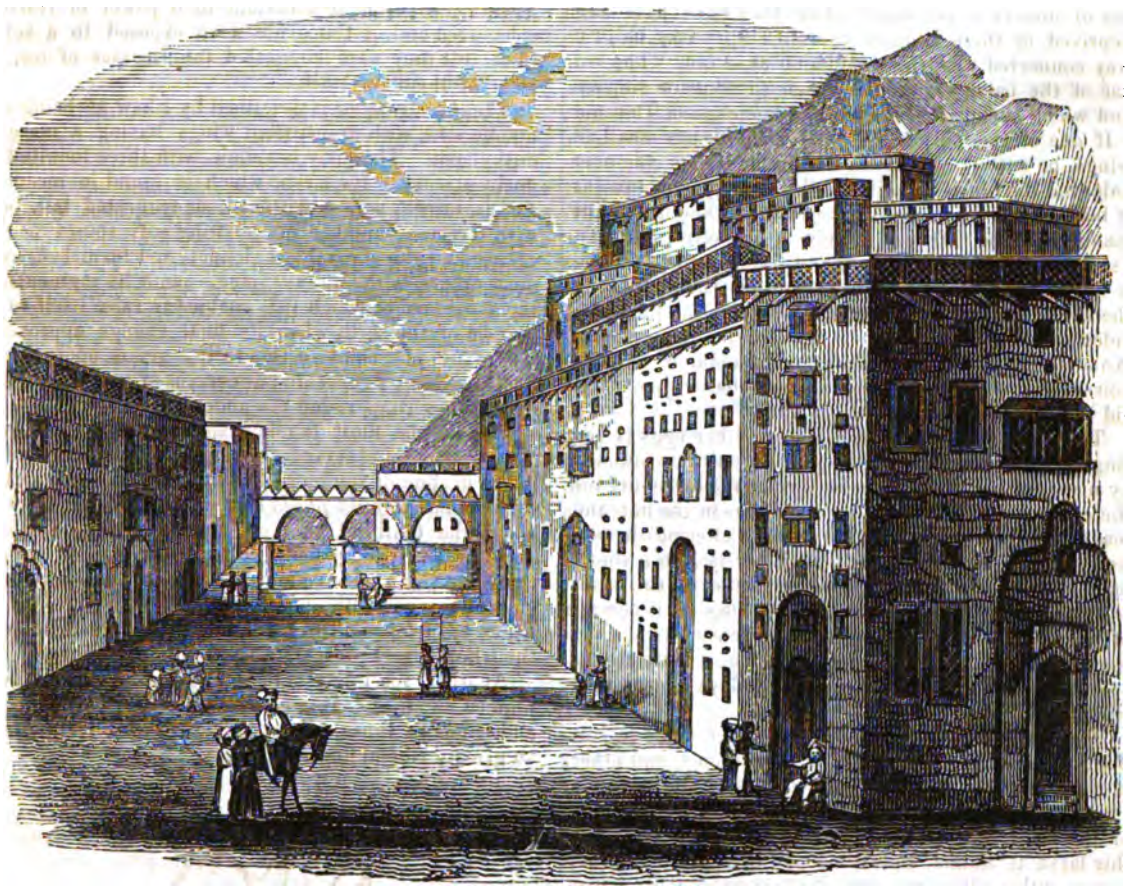
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº 597. OCTOBER 23RD, 1841. {PRICE ONE PENNY.

TURKEY AND THE TURKISH PROVINCES.



STREET IN MECCA.

MECCA AND ITS INHABITANTS.

In our recent article on Antioch, we promised to visit some of the more southern towns of the empire, such as Mecca and Medina, with a view of shewing their chief points of difference from the towns of European Turkey. We shall therefore treat of Mecca in the present paper, and devote a subsequent article to Medina.

Both Mecca and Medina are situated in Arabia, and it seems desirable to mention in what way they are connected with the Turkish empire. After the downfall of the Caliphs and the rise of the Ottoman power, all the fertile parts of Western Arabia, as well as the principal cities, came under the Turkish government one by one; and in the province of Hejaz, in which both Mecca and Medina are situated, the Turkish supremacy has been shown somewhat in the following manner. The Sultan, as protector of the Mohammedan Holy Places, appoints a Pacha of Hejaz, who resides in the port nearest to Mecca, with a Turkish guard, and divides the receipts of the custom-house with the sheriff of Mecca. The rise of the Wahhabites, and the ambitious designs of Mehemet Ali, have somewhat disturbed this arrangement; but we believe that, nominally at least, the Sultan retains this supremacy.

The city of Mecca, the birth-place of Mohammed, is situated about one day's journey from the Red Sea, in a valley which winds irregularly between two mountains; and is surrounded by a district presenting an appearance of the greatest sterility. Not a river, streamlet, or brook, refreshes the traveller in this sandy valley, or awakens the least appearance of vegetation on its surface. Inclosed by high mountains and sterile sands and exposed to the heat of a scorching sun, the inhabitants are dependent on other places for provisions; their own soil being unable to repay the labour of the cultivator. Their markets are furnished with a supply of flour from Egypt, with vegetables and rice from India, and with herbs, &c., from Tayif—the price being proportioned to the difficulty of obtaining them. The lower classes of people obtain water from wells, and though it is heavy and brackish they never drink any other; those who can better afford to pay for it, get their supply from the neighbouring mountains, where rain-water is collected for that purpose. It is remarkable, that there are very few dogs in Mecca; most other Mohammedan towns, in a climate similar to theirs, are overstocked with these animals, and are likewise infested with swarms of insects and vermin, from which the sacred city is in a great measure exempt.

The chief annoyance in this respect is experienced from mice of the European kind, which are numerous and very bold. A traveller, who remained some time at Mecca, informs us that these troublesome visitors would leap on his bed and stare in his face; and that on one occasion, when he neglected to wash some balm of juniper from his hand, they bit his fingers severely while he slept.

It may be supposed, from what has been said of the confined situation, aridity of soil, and absence of vegetation of the valley in which Mecca stands, that the climate must be very unfavourable to the health of its inhabitants; but this does not seem to be altogether the case. That they are a poor, meagre, wretched-looking race of men, and that they seldom live to be very old, we have the testimony of several travellers to assure us; but they appear to be liable to few diseases of a chronic nature, and to suffer less than we might expect from the many deprivations attending their isolated position and burning climate. The melancholy appearance of these people corresponds with the constitution of their minds: they are naturally inclined to sadness, and the sound of singing is rarely heard in Mecca, while musical instruments seem to be entirely unknown. They are, however, quickly irritated, and their slaves are said to receive worse treatment than any others among Musselmen.

It falls not within our province to notice the circumstances attendant on the birth of Mohammed, which event took place at Mecca in the year of our Lord 569, or the steps by which he attained that dominion over the minds of men which led them to embrace all that fell from his lips as the truth of God, however much it might militate against the common laws of justice and humanity, or give a sanction to immorality and crime. We have only to do with the scene of his early years, where before prosperity had altered and sullied his views, he spent much time among the mountains that surround his city in meditating on his future plans and on the abolishment of idolatrous worship, which his strong mind rejected and abhorred. On his account, therefore, not only the city itself, but the whole neighbourhood of Mecca, is viewed by his disciples as a place of peculiar sanctity, and has been for ages the centre of Mohammedan worship, and the object of continued pilgrimage from all parts of the world where his followers live. By the law of his religion, every Musselman is obliged to go, once in his life at least, to pay his devotions at Mecca; but there must have been found a way of dispensing with this law, or of evading its requirements, since the number of the pilgrims at Mecca, grows less every year; and instead of crowding in multitudes, as formerly, from all parts of Asia and Africa, and bringing with them rich presents for the support of the temple at Mecca, the pilgrims are now comparatively few in number, and devoid of wealth: so that the present situation of the inhabitants of Mecca, who have no other source of livelihood than that which arises from the visits of pilgrims to their city, forms a remarkable contrast with that of their ancestors, who abounded in wealth from the same cause. So poor is the place by nature, and so grossly ignorant are its inhabitants, that they exist in a state of pitiable dependence on the religious enthusiasm of others; and in case the visits to Mecca should altogether cease, it must inevitably be deserted by its wretched people or reduced to a simple *douar* or hamlet.

Ali Bey gives the following account of the state of the arts and sciences in Mecca:—

I believe there is no Musselman city where the arts are so little known as at Mecca. There is not a man to be found who is capable of making a lock, or forging a key. All the doors are locked with large wooden keys, and the trunks and cases with padlocks brought from Europe. Slippers and sandals are brought from Constantinople and Egypt; for they know not how to make them at Mecca, except, indeed, those of wood or untanned leather, which are very bad. There is not a single man to be found who knows how to engrave an inscription, or any kind of design on hewn stone, as formerly; nor a single gunsmith or cutler able to make a screw, or to replace a piece of the lock of a European gun; those of the country being able to manufacture only their rude match-locks, their bent knives, lances, and halberds. The sciences are found in the same state as the arts at Mecca. The whole knowledge of the inhabitants is confined to reading the Koran, and to writing very badly. They learn from their infancy the prayers and the ceremonies of the pilgrimage to the house of God, to Saffa, and to Merona, in order to be able at an early age to gain money by officiating as guides to the pilgrims. Children of five and six years old are to be seen fulfilling these functions, carried upon the arms and shoulders of the pilgrims, who repeat, word for word, the prayers which the children recite, at the same time that they follow the path pointed out by them to the different places.

The city of Mecca is undefended by walls, and is quite open on all sides. It has a strong fortress on one of the hills, and there are some isolated towers in the valley, but they are capable of containing only a small garrison. Many of the buildings are grouped together at the north of the temple, and are prolonged through the valley in the form of a crescent. The principal streets are regular, and some of the houses are very handsome. They have, like the Cyprian dwellings, two rows of windows, with balconies covered with blinds. There are several large windows, quite open as in Europe; but the greater part are covered with a curtain made of palm-tree. These curtains are extremely light, and effectually screen the apartments from the rays of the sun, while they do not intercept the entrance of the air. The houses are mostly of stone, three or four stories high, and ornamented with mouldings and paintings. The doors have generally a base, with steps and seats on both sides. All the staircases are narrow; but the rooms are lofty and well proportioned. Every inhabitant has a particular interest in the preservation and adornment of his dwelling, in order that it may invite the attention of pilgrims: whose payments for lodgings during their stay in the city, with the gifts which they are induced to bestow, are the only means of livelihood for the people during the remainder of the year.

The population of Mecca is rapidly diminishing. Some parts of the city lie entirely abandoned and in ruins, and two-thirds of the remaining houses generally stand empty. Notwithstanding the reputation for holiness which belongs to the city, the morals of the people are said to be more depraved than those of the inhabitants of any other Moslem city. Their thievish propensities are indulged in the very temple itself; and they seem wholly indifferent to the degraded and miserable condition to which they are sunk. The women have a graceful appearance, and speak very well and with much feeling; but they are greatly disfigured by the practice of making indelible drawings on their skin, and of staining their eyelids and teeth, the latter of a bright yellow. Their lips, feet and hands they stain with a red colour; and the materials they employ for this purpose are the same as those used by the Egyptians. Their dress consists of an immense pantaloon of Indian striped cotton, a loose robe bound round the waist with a belt; and a caftan of India cotton. Their ornaments are rings and bracelets, which they wear on their arms, legs, and feet; and occasionally a nose-jewel hanging down on the upper lip. The costume of the men is composed of a *benish*, or exterior caftan bound with a belt, a shirt, drawers, and slippers.

The greatest curiosity in Mecca is the Kaaba or "House of God" which is of high antiquity, and which was held in great veneration by the Arabs, long before the time of Mohammed. It is built of square-hewn, but unpolished stones of quartz, schorl, and mica: its height is thirty-four feet four inches, and its four sides, (for it is nearly square,) vary from twenty-nine to thirty-eight feet

in length. In the angle formed by the north-east and south-east sides, is placed a large black stone, which is raised forty-two inches above the pavement, and is bordered all round with a plate of silver about a foot broad.

This much admired stone is believed by all true Moslems to have been at first a transparent hyacinth presented to Abraham by the Angel Gabriel, who brought it from heaven; but being touched by a sinful woman, it became black and opaque. It is said to be a fragment of volcanic basalt sprinkled throughout its circumference with small pointed, coloured crystals, and varied with red feldspath, upon a black ground.

The whole of the Kaaba, except the base, is covered with a curtain of black cloth. This cloth, which is called *Tob el Kaaba* (the shirt of the Kaaba,) is renewed every year; but, instead of being spread over the building, it is at first, fastened up in drapery, to keep it from the hands of the pilgrims; and thus it is represented in our engraving. The Tob has a gold band two feet broad, surrounding it at two-thirds of its height; and on this band are inscribed numerous passages from the Koran. A new curtain is also sent every year to cover the door, which is truly magnificent; being embroidered all over with gold and silver.

The interior of the Kaaba consists of a room or hall, with two pillars to support the roof. The columns and the wall are covered with splendid rose-coloured silk, sprinkled with flowers, embroidered in silver, and lined with white silk. This magnificent covering is presented by the Sultan of Constantinople, on his accession to the throne, and it is only on that occasion that it is ever changed. The floor is paved with very fine marble. From one column to another, and from both columns to the walls, there are bars of silver, from which are suspended a great number of gold lamps, one above the other.

Near the Kaaba, within a railing of bronze is a sort of sarcophagus, hung with a black cloth embroidered with gold and silver, and having golden acorns attached to it. We are told that this sarcophagus is nothing else than "a large stone that served Abraham for a footstool to construct the Kaaba, and increased in height as the building advanced, in order to facilitate his labours; at the same time that the stones came out miraculously already squared from the spot where the footstool now stands, and passed into Ismael's hands, and thence into his father's."

Inclosed within a small building also near the Kaaba, is the well Zemzem, believed by the Moslems to be the one miraculously opened by the angel of the Lord for Hagar, when nearly perishing from thirst in the desert with her son Ismael. The person who has the charge of this well, and is called the chief of the Zemzem, is a person of no small consequence. He gives out the water to the fainting pilgrims; and possessing the confidence of the chief officers of the temple, he is said to obey their wishes implicitly by taking the opportunity his employment affords, of administering poison to their enemies, and to those who have become in any way obnoxious to them.

The Kaaba is nearly in the centre of the temple. The ground round it is paved with fine marble, on which the pilgrims perform their circuit; for to walk seven times round the Kaaba repeating a certain number of prayers is one of the numerous ceremonies which a pilgrim has to go through. We cannot here describe them in their order; but the most important seem to be, kissing the black stone, drinking as much water as possible from the sacred well Zemzem,—making seven journeys between two of the hills and repeating loud prayers on each,—having the head shaved and repeating after the barber certain prayers,—performing their devotions in the Kaaba, and afterwards,—(if they are so highly privileged,)—assisting in washing the floor of the sacred building. The water thus employed, as it flows out at a hole made for the purpose, they collect eagerly,—drink it,—and pour it over their persons. Thus do these poor Mohammedans appease their own consciences, and imagine that they are propitiating the favour of God, by a round of empty observances and wearisome ceremonies.

The rapidly declining state of the city of Mecca and the great decrease in the number of pilgrims who pay their adorations at the birth-place of their prophet, will probably cause the foregoing description of the place, and its customs, to apply, in the course of a few years, to the *past* alone. The devastations committed in the neighbourhood of Mecca by wandering Arab tribes, have deprived it of many sources of attraction for the devotee. There is one principal object of pilgrimage, however, remaining, almost much venerated by pilgrims as those within the city itself; and with the mention of this we close our account of Mecca. The place we speak is a mountain called *Arafat*, where, according to the ridiculous superstition of the people, Adam met his wife, after they had undergone a separation for the space of two hundred years; and where *having built the chapel now standing*, he left Hejaz and retired with Eve into the island of Ceylon.

SUPERSTITION AND IMPOSTURE.

Among those persons who came to pay their respects to me, were two remarkable impostors residing in this neighbourhood, and acting in different departments of knavery: one of them had lately abandoned his claims to supernatural power, to save himself from present injury; and the reputation of the other I had completely ruined by convicting thieves to whom his god had promised concealment and security on receiving part of their plunder. The former of these knaves, an old man, had unluckily for himself inspired his neighbours with a belief that he had the power of bringing rain by performing certain ceremonies; and they had spread his fame over the whole district. From this, and his knowledge of the appearance of the sky, and the various signs of coming showers or approaching heavy rains, he had long imposed on the people, and reaped considerable profit; until at last their eagerness of belief outrunning his powers of imposition, not only destroyed his occupation, but nearly cost him his life. It was urged by some one, and acquiesced in by all, that, as there was no doubt of his ability to call down rain when necessary, it ought not to be left to his caprice when this talent should be exercised; and that when required by a whole village, he should be obliged to furnish rain in sufficient quantities: that, if he did so, he was to be liberally rewarded; but on the contrary, if he were contumacious, and refused to give the necessary supply, that he should be tormented with thorns, or beat into compliance. Having suffered severe punishments on various occasions, he at last made up his mind no longer to be a responsible agent for the weather, and loudly and constantly denied having any authority in the matter. This, although deemed to be a false excuse, proved a sufficient protection to him during several seasons in which there was no deficiency of moisture; but this season the people, losing all patience from a long-continued drought which was destroying their crops, dragged the recusant cloud-compeller to various villages, in which he suffered severely for his supposed neglect. Even the chief of the district had determined on having rain by force, if fair means proved insufficient, and had sent some of his followers to bring the conjuror to the village where water was most required; it was while on his way there that he was fortunate enough to see me, and, making his escape, threw himself on my protection. In the court-house the old man stated, that he was in terror of his life, for at present there was every appearance of continuance of the same dry weather that had already done so much mischief; and then gravely proceeded to prove to me by many oaths that it was no fault of his that no rain was forthcoming. I had some difficulty in protecting this old impostor, particularly as a few slight showers fell near his village, which was situated on one of the highest inhabited parts of the district: and I have no doubt that the people thought, not that they had been the infatuated dupes of a rogue, but that I was imposed upon by a churlish wizard.—Forbes's *Ceylon*.

THE VEGETABLE BUTTER OF AFRICA

In a Letter to the Editor of THE FRIEND OF AFRICA, *from* Mrs. (BOWDICH) LEE.

HAVING been long convinced that the vegetable butter of Africa might form an important article of commerce, I send you a brief account of all that is known concerning it either as observed by myself or others, hoping, through the medium of your periodical, to awaken more attention to its valuable qualities than it has hitherto excited.

Mungo Park was the first traveller who spoke of the vegetable butter in so decided a manner as to give any idea of what it really is, although older writers mention it under various names for grease. In the countries which he first visited, it was called the Shea tolu, and he describes the tree from whence it is derived as resembling the American oak in appearance, adding that it is an article of food, and bringing a bunch of the leaves home. The flower has never reached this country, but the seed, or fruit, so decidedly refers the tree to the natural family of Sapotæ, that botanists have placed it there as a species of Bassia, differing from that of the tallow tree on the coast of Africa, and elsewhere. It extends over a large portion of the Continent, from Jaloff and Houssa, to the latitude of the Gaboon river; how much farther south is not yet known; but it has not been observed in the neighbourhood of the Congo. Mr. Lander constantly mentions it in his last voyage, under the name of "mi cadania," and in one instance he states that he received two hundred-weight of the butter as a present. I will not here insert any botanical description of the Bassia, as it will be easily found in Persoon's list of the class Dodecandria monogynia, and in other authors, but proceed to speak of my own knowledge of the tree and fruit. On my first arrival at Cape Coast, I constantly heard of the "Ashánti grease" as an indispensable article of the native toilet, for both males and females; and no sooner had I an establishment, than I was frequently obliged to purchase a pot of it for the use of my women. Without some aid of this sort I was told that their skins would become white and scaly, and even crack. When I omitted the supply, such constant recourse was had to the palm oil intended for the lamps, that for the sake of my olfactory nerves I hastened to repair the fault. It looked very dirty and smelt very disagreeably after it had been perfumed, so that I was obliged to insist upon its being used in its pure state; but even this was not sweet, owing to the dirty state in which it arrived from Ashánti. On his return from that place, Mr. Bowdich spoke highly of its fragrance when fresh, and of its use in cooking and burning; but a large pot of it which he had procured at Coomassie, (Kumási) was either lost, or stolen on his perilous route back to head-quarters. The vessel in which we embarked for England was bound to the Gaboon for a cargo of wood; and we, in consequence, were detained in that river for many weeks, at a distance of more than fifty miles in the interior, and in a latitude of 9° north. During this period we passed several days in the native town of Naange, where I had an opportunity of seeing the vegetable butter in its greatest perfection, though the season was past for procuring the flowers. The substance was perfectly white, and resembled English butter immediately after it is turned out of the churn. The food cooked in it, such as meat, fish, bananas, &c., had the most delicate flavour imaginable; no smell issued from it, and on biscuit it was excellent. I filled two small jars with it, into one of which I put salt, in the manner of potted butter, but this turned rancid before my four months' voyage was completed, while that in the other jar, having been simply clarified, remained sweet and fresh for years. I was very anxious to see the tree, although not in flower; but this was no easy task for a European female to accomplish, as it grew in the thickest part of the forest. Preceded, however, by two natives with hatchets to open the path, two more to frighten away reptiles, and scouts to give the alarm of wild beasts, and who made ten times more noise and fuss than was necessary, I was taken through the bush to a tall, straight tree, the bark of which resembled that of an ash. The branches sprang from the trunk at so great a height that we could not procure either leaves or pods, and all the advantage which I derived from my expedition was the power of saying that I had seen "the fat tree," as the natives term it. The governor of the town made up for my disappointment by giving me several of the nuts, and a fast-decaying pod; we put some of the former into boxes of earth, and brought them with us half across the Atlantic, when they perished, notwithstanding our care.

In the neighbourhood of the Gaboon the butter is extracted by first boiling the nuts, and then expressing the oil; the inhabitants deem it a most precious production, and great distress is felt when any scarcity of it takes place. Yet they use no precautions to increase the number of trees. Their favourite comparison for anything wonderful or advantageous, is "like the fat tree;" and in a song composed on first seeing white men, these are the words of the burden.

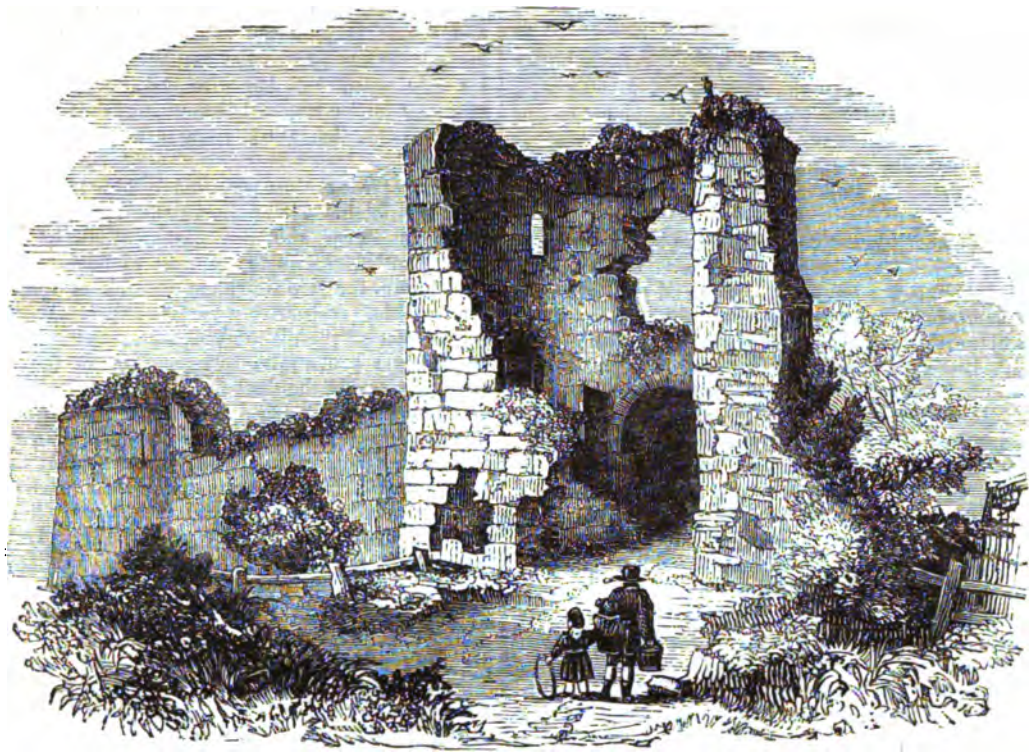
On going back to the vessel, I showed the nuts to a servant of mine from Booroom, a country to the east of Ashánti; she instantly recognised them, and told me that her people bruise the nuts, boil them, and when the oil rises to the surface of the water, they skim it off, and put it into calabashes to cool.

When I visited Africa a second time, I procured some of the butter from the Jaloffs, and when in England, I afterwards found it so healing to the skin in frosty weather, or easterly winds, that I submitted it to the inspection of M. Chevreul, the celebrated analyser of different kinds of grease, and the following is a translation of his report.

The substance sent to me by Madame Bowdich, under the name of vegetable butter, is formed:—1st., of a small proportion of aromatic principle; 2nd., of oleine; 3rd., of stearine. This last is analogous to the stearine of mutton fat, for in saponification it gives stearic acid. The vegetable butter is perfectly liquid at 112° of Fahrenheit, at 100½° it begins to get turbid, at 96¼° it exhibits a liquid portion, in which float some small brilliant crystals. The liquid part is a combination of oleine and stearine, as are also the crystals, but the latter contain a much larger portion of stearine. A thermometer plunged into melted vegetable butter falls to 83¼°, it afterwards ascends to 89¼°, when it becomes quite concrete. It is easily converted into soap, when heated with solution of potash, or soda, and the soaps thus obtained are analogous to those made from mutton fat, with this advantage, that they are inodorous. If it were possible to procure this substance in any quantity, and at a reasonable price, it might be advantageously employed by soap manufacturers; either mixed with vegetable oils to form soaps similar to those mixed with olive-oil, or alone for toilet soaps. Lastly, the vegetable butter appears to me to be capable of being employed for the same alimentary uses as the Cocoa Butter.

MAN, for whom all things were made, was himself made last of all. We are taught to follow the heavenly Artist, step by step, first in the production of the inanimate elements; next, of vegetable, and then of animal, life; till we come to the master-piece of Creation, man, endued with reason and intellect. The house being built, its inhabitant appeared: the feast being set forth, the guest was introduced; the theatre being decorated and illuminated, the spectator was admitted to behold the splendid and magnificent scenery in the heavens above, and the earth beneath; to view the bodies around him, moving in perfect harmony, and every creature performing the part allotted it in the universal drama; that seeing, he might understand, and understanding, adore, its Supreme Author and Director.—BISHOP HORNE.

PEVENSEY CASTLE.



RUINS OF PEVENSEY CASTLE.

. . . . By degrees the Saxon empire sank,
Then set entire in Hastings' bloody field.
Compendious war! (on Britain's glory bent,
So fate ordained) in that decisive day,
The haughty Norman seized at once an isle,
For which, through many a century, in vain,
The Roman, Saxon, Dane, had toiled and bled:
Of Gothic nations this the final burst;
And, mixed the genius of these people all,
Their virtues mixed in one exalted stream,
Here the rich tide of English blood grew full.—THOMSON.

THE venerable ruins of Pevensey Castle, in Sussex, form an impressive memorial of that stormy period when the Normans succeeded the Saxons in the government of Britain. It was here that William of Normandy landed, nearly eight centuries ago, and within a few miles is the spot where the decisive battle was fought between him and Harold the Saxon. Let us endeavour to present the broad features of this momentous struggle in a brief and popular form.

About the year 1040, after a temporary possession of power by the Danes, Edward, surnamed the Confessor, of the Saxon lineage, was chosen king of England. He was childless, and long before his death many were the discussions and speculations as to who should succeed him. William, the duke of Normandy, who was Edward's cousin,—Earl Harold, an ambitious noble, whose sister Edward had married,—and Edgar Atheling, the real descendant of the Saxon kings who had been displaced by the Danes,—all became objects of interest in this respect. Edward, as he grew older, showed a vacillating character, which proved the cause of much subsequent misery to his kingdom. About the year 1060 he determined that William should succeed him; then he changed his mind, and devised in favour of the Atheling; then he again wavered, and sent Harold over to Normandy, to inform William of his final determination in his favour. William, knowing the influence of Harold in England, endeavoured to secure his friendship and support, and, outwardly at least, succeeded. But Harold was an ambitious man, and left no measure untried which promised to increase his power, whether legally or not.

At length, in the beginning of the year 1066, Edward approached his end, and Harold seems now to have imbibed hopes of the sovereignty. Accompanied by a few adherents, he found his way into the apartment of the dying monarch, whom he questioned as to the appointment of a successor. "Ye know full well, my lords," said the now feeble king, "that I have bequeathed my kingdom to the Duke of Normandy, and are there not those *here* whose oaths have been given to secure his succession?" alluding to a kind of oath of fealty which Harold had taken towards William. But Harold renewed his importunities, and the sick and wearied monarch replied, "Harold, take the kingdom, if such be thy wish, but the gift will be thy ruin. Against the duke and his barons no power of thine can avail." Harold replied that he feared no enemies, and the king, shortly before he breathed his last, as if worn out by these cravings for power, said, with a sort of pettish weakness, that the English might have Harold, or any one they pleased, for their king.

Such was the mode, according to one account, in which Harold acquired his equivocal claim to the English throne, and collateral circumstances do not throw any discredit on the account. Sir F. Palgrave shows how strikingly the circumstances resemble the scenes which often occur at the death-bed of a wealthy but weak-minded man.

The childless owner of a large estate, (says he,) at first leaves his property to his cousin on the mother's side, from whose connexions he has received much kindness. He advances in age, and alters his intentions in favour of a nephew on his father's side, an amiable young man living abroad, and from whom he had been estranged in consequence of a family quarrel of long standing. The young heir comes to the testator's house, is received with great affection, and is suddenly cut off by illness. The testator then returns to his will in favour of his cousin, who resides abroad. His acute and active brother-in-law has taken the management of his affairs, is well informed of this will, and when the testator is on his death-bed, he contrives to tease and persuade the dying man to alter the will again in

his favour. This is exactly the state of the case; and though considerable doubts have been raised relating to the contradictory bequests of the Confessor, there can be no difficulty in admitting that the conflicting pretensions of William and Harold were grounded upon the acts emanating from a wavering and feeble mind. If such disputes take place between private individuals, they are decided by a Court of Justice, but if they concern a kingdom they can only be settled by the sword.

This familiar way of illustrating the subject is particularly calculated to impress its main features on the mind.

No sooner was Edward dead than Harold took prompt measures to seize the vacated throne. William was abroad; Atheling was youthful, timid, and poor; Harold was at hand, bold, and aspiring; and the nobles, partly by force, partly by entreaty, conferred the crown on Harold. But his tenure of sovereignty was brief. On the 6th of January, 1066, he assumed the crown, and on the 14th of October in the same year he terminated his career, after a troubled reign of a very few months. He contrived to embroil himself with one of his brothers who had joined the Norwegian king in a hostile attack on England, and on the very next day after Harold had defeated this brother in the north of England he heard that William of Normandy had landed, with a powerful force, at Pevensey, in Sussex.

William is said to have been hunting in his park at Rouen when intelligence was brought him that Edward was dead, and that Harold, in despite of his oath of fealty, had seized the vacant sceptre of England. For a time he was as one stunned by the suddenness of the announcement, and it was not until some of his nobles had aroused him that he could form any decided plan of action. As, however, there seemed to be a general impression in his court that the claim of William to the English crown was founded on a legitimate gift from the deceased monarch, the nobles lent their assistance to him in his project to dispossess Harold. The times in which these events took place were feudal times, in which nobles held their possessions under a contract to fight for the king whenever he should require their services, and in which the vassals or retainers accompanied a noble to battle in return for the protection which they received from him. Under such circumstances there was no national army, for the retainers of any noble, who formed the real fighting soldiery, were ordered not by their king but by their lord, and consequently a king had to obtain the support of his nobles before he could command the personal services of the vassals belonging to them. This feudal service was, however, by agreement confined to the soil of their birth, and William found that he could not obtain the services of his nobles in an invasion of England, without promising them large rewards in the shape of possessions in the conquered country. This was a very important feature in the transaction, and one which may be deemed the principal cause of the tenure of land in England at the present day. Many of our noblemen can trace back their titles and estates to the time of the Conquest, when their ancestors received them in lieu of services rendered to the Conqueror.

While William was making these preparations Harold was preparing for defence on the southern coast of England, but at the time when the attack was actually made Harold was in the north of England. He was informed by a messenger, who had travelled with the utmost speed, that William had crossed the Channel with seven hundred ships and boats (some say three thousand) and had effected a landing with his army at Pevensey.

On September 29th, 1066, this memorable landing was effected. The war-horses, the archers, the knights, the standard-bearers, the duke himself,—all landed in safety, and almost without opposition. William occupied an ancient Roman castle, at Pevensey, and exhorted his troops to prepare for the coming contest. He rendered all his vessels unserviceable, in order that no idea of escape might enter into the minds of his soldiers, and took every opportunity to cheer them to their approaching duties. He is said to have stumbled when he first put his foot upon English ground: a soldier said, "*Mal signe est ci:*" "No," cried William, showing a clod of earth in his hand, "I have taken possession of the country."

To meet troops thus prepared for him Harold hastened from the north. He stopped a short time at London, to collect his forces, and then hastened onward to Sussex. Some fruitless attempts are said to have been made at negotiation, for it was evident to each of the chieftains that they had respectively ventured their whole fortunes on the cast of the die, and before engaging in a conflict which must prove fatal to one of them, they made an attempt to avoid the danger. The attempt was, however, unsuccessful: each asked more than the other could or would concede, and nothing remained but to settle the struggle by the sword. When it was evident that battle was inevitable the two armies passed the intervening night in a very different manner. Harold's army indulged in riot and debauchery, the 'Wæs-heal' and 'Drink-heal' resounding from the tents, whereas William's army spent the time in responding the Litany and chanting psalms.

The next day, the 14th of October, saw the two armies pitted against each other. The English were fortified in their position by lines of trenches and palisadoes, and within these defences they were marshalled, shield against shield, presenting an impenetrable front to the enemy. The men of Kent formed the van-guard. The burgesses of London claimed the honour of being the royal body-guard, and were drawn up around the standard, at the foot of which stood Harold, his two brothers, and the bravest of his nobles.

The English stood to meet the attack of the Normans. William Fitzosborn and Roger Montgomery led the first division; Almeric of Thouars and Alan Fergaut, the second; while William led on the third division in person, having before him his minstrel, Taillefer, who loudly sang the lay of Charlemagne and Roland, and the mighty deeds of the Paladins. The three divisions, thus marshalled, attacked, nearly simultaneously, three different parts of the English force, and a fearful slaughter commenced.

It forms no part of our object to detail the events of the battle—the attack and counter-attack—the fierce struggles for commanding positions—the alternate yielding and rallying of each party the incessant exertions of the two leaders to keep their adherents in a state of excited enthusiasm. Suffice it to say that, after Harold had been wounded in the eye by an arrow, and borne from his horse, the discomfiture of his troops became evident, and the night closed in with victory on the side of William. From that hour he became in effect, and soon after formally, king of England, and his barons received the broad lands of the conquered country as a reward for their exertions in the day of battle.

As to the real fate of Harold, a curious uncertainty exists. One of the early chroniclers states that William surrendered the dead body of the defeated monarch to Githa, Harold's mother, who caused it to be buried in the abbey of the Holy Cross. Another writer says that a body, of which the features were undistinguishable, but supposed to be those of Harold, was found between the corpses of his two brothers, and that William caused this corpse to be buried in the sands of the sea-shore, accompanying his directions with the words, "Let him guard the coast which he so madly occupied," and refusing to Githa the purchase of the body by its weight in gold. A third account, furnished by the monks of Waltham Abbey, to which Harold had been a great benefactor, states that the Conqueror having given to

some of the monks permission to search the field for the dead body of Harold, they sought among the loathsome heaps of the unburied, but sought in vain: they then obtained the aid of Editha, one whom Harold had tenderly loved, to search with them: she selected a ghastly and mutilated corpse as that of Harold, and had it entombed in Waltham Abbey.

There were those, however, who denied that Harold fell on that memorable day. Years after this event, when the Norman yoke was firmly and oppressively established in England, a decrepit hermit inhabited a cell near the Abbey of St. John, at Chester. Henry the First once visited the scarred, half-blinded, and recluse old man, and is said to have heard from the hermit himself that he was Harold, who had been secretly conveyed from the field of battle to a castle on the coast, and from thence to the place of his seclusion. Sir Francis Palgrave, after noticing the various accounts given of the fate of Harold, says:

If we compare the different narratives concerning the inhumation of Harold we shall find the most remarkable discrepancies. It is evident that the circumstances were not accurately known, and since those ancient writers who were best informed cannot be reconciled to each other, the escape of Harold, if admitted, would solve the difficulty. I am not prepared to maintain that the authenticity of this story cannot be impugned, but it may be remarked that the tale, though romantic, is not incredible, and that the circumstances may be easily reconciled to probability. There were no walls to be scaled, no fosse to be crossed, no warder to be eluded; and the examples of those who have survived after encountering much greater perils are so very numerous and familiar, that the incidents which I have narrated would hardly give rise to a doubt if they referred to any other personage than a king.

A word or two respecting the castle at Pevensey. The spot where the battle took place is that which is now known as Battle, a few miles from Hastings and from Pevensey. Harold's standard was torn at the end of the conflict, William's planted in its place, and a splendid abbey afterwards built on the spot, in commemoration of the victory, the high altar occupying the precise place at which the standard had been planted. On William's accession to the throne he presented the manor of Pevensey (called by the Saxons *Peowensea*, and by the Normans *Pevensil*) to his half-brother, Earl Robert, who fortified it with the noble castle, now in ruins, and which was probably formed on the ruins of the ancient Roman castle. The remains are situated on a craggy steep, commanding a beautiful view of the adjacent country. The external walls are circular, and inclose an area of seven acres, being, together with the towers, tolerably entire for the height of twenty-five feet. They display throughout abundance of Roman bricks, which furnish corroborative evidence of the previous existence of a Roman fortification on that site.

BIOGRAPHICAL MEMOIR OF DR. THOMAS YOUNG.

II.

On his return to England, Young entered himself of Emmanuel College, Cambridge, of which Dr. Farmer, an intimate of his uncle, was then master. There he took his regular degrees in physic, but did not attend any of the public lectures. He contented himself with pursuing in private the various studies in which he was engaged, cultivating the intimacy of the most highly-gifted members of the university, and discussing subjects of science with the professors. In these engagements he passed the time of his residence at college, finding no rival in the variety of his knowledge, and few competitors in some of its branches.

At the death of his uncle, Dr. Brocklesby, in 1797, Dr. Young came into possession of the house, books, pictures, and part of the fortune of that gentleman. He now found himself in circumstances of independence, and surrounded by distinguished and valuable friends, whose intimacy he continued to prize and enjoy through life. On leaving Cambridge he settled as a physician in London, in Welbeck Street, where he continued to reside during twenty-five years.

In 1801, Dr. Young was appointed Professor of Natural Philosophy in the Royal Institution, and during two years he continued to lecture alternately with Sir Humphrey Davy. As a lecturer, he was not eminently successful, for though his lectures were full of striking and original matter, he was not happy in the mode of conveying his ideas, so as to suit the capacities of a mixed audience. He was always compressed and laconic, and seemed to think his audience better instructed than such an assembly could possibly be, in the abstruse points on which he delighted to dwell; it is even said that men of science could not follow him without considerable difficulty. Even as a lecturer on the Practice of Medicine at St. George's Hospital, he was by no means popular. Arago suggests, that his want of success may perhaps in justice be attributed to the frequent opportunities he took of pointing out the inextricable difficulties which are met with at each step in studying the numerous diseases to which the human frame is liable. Those among the faculty who wished to attain their knowledge rapidly, and with as little labour as possible, must needs have felt discouraged by such language as Young was constantly making use of,—for instance when he said—"No study is so complicated as that of medicine; it exceeds the bounds of human intelligence. Physicians who act precipitately, without attempting to comprehend what they observe, are often as much in error as those who constantly generalise from observations which are not analogical." Or, "In the *lottery* of medicine, the chances of the possessor of ten tickets are evidently greater than those of the person who has only five."

The extent of Dr. Young's knowledge appears to have had an effect that was unfavourable to his practice as a medical man. He was undecided, and wanting in confidence at the sick-bed. Remarkably distinguished for boldness in his scientific views in general, he was yet so well aware of the prejudicial effects which might eventually result from the action of the best medicines, that he appeared to balance these against the favourable chances which might be expected, and this at a time when decisive measures were called for. The same timidity was displayed in all his medical works.

He was scarcely convinced, (says Arago,) of the soundness of his own arguments, when he attacked the celebrated Dr. Radcliffe, whose whole secret in a brilliant and successful practice, was, as he himself declared, the employment of contrary remedies, or when he contended with Dr. Brown, who found himself under the painful necessity of acknowledging from the evidence of the official documents of a fever hospital, that the majority of fevers, when left to themselves, are neither more severe, nor of longer duration, than when they are treated by the best methods.

In 1802, Dr. Young published his *Syllabus*, a course of Lectures on Natural and Experimental Philosophy, with mathematical demonstrations of the most important theorems in Mechanics and Optics; in the same year he accompanied the Duke of Richmond and his brother, Lord G. Lennox, in his medical capacity, to Rouen, and in an excursion to Paris where he was first present at the National Institute, at that time attended by Napoleon. There he made the acquaintance of several of the leading members of that distinguished body, into which he was himself eventually elected. On his return he was constituted Foreign Secretary to the Royal Society, an office which he maintained during life. In 1804 he married Eliza, daughter of J. P. Maxwell, Esq., of Cavendish Square,—an union productive of uninter-

rupted happiness for the remainder of his life. At this time it was Dr. Young's resolution to confine himself for the most part to medical studies, and to make himself known to the public in no other character. But he had resolved on that which to him was impossible. He never slackened in his literary and philosophical exertions. He was always ready to lend his aid to any one engaged in similar investigations. He was living in the first circles in London, and his avocations could not be concealed; therefore it is conceived that in putting forth his non-medical papers separately and anonymously, he was making a fruitless as well as voluntary sacrifice of the general celebrity to which he was entitled. From an impression that it would be likely to interfere with his success as a medical practitioner, he likewise resigned his professorship in the Royal Institution. In his anonymous publications, however, the veil was very transparent Two contiguous letters of a Latin motto, in a regular order, formed the signature to each paper, but Young communicated the Latin words to all his friends; and few were ignorant of the real nature of his pursuits.

In 1807, Dr. Young published his Course of Lectures on Natural Philosophy and the Mechanic Arts, in two quarto volumes, each consisting of eight or nine hundred pages, where every branch of natural philosophy was treated in a new and profound manner. It is said of this work, that it contains the original hints of more things since claimed as discoveries, than can perhaps be found in a single production of any known author. On this occasion Dr. Young forgot his former precautions, and gave his name to the publication. We cannot give even the titles of all the numerous works which Dr. Young published, but the mention of only a few of them will show how diversified were his researches.—Memoir on Iron Furnaces. Essays on Music and Painting. Researches into the habits of Spiders. On the Stability of the Arches of Bridges. On the Atmosphere of the Moon. The Mathematical Theory of Epicycloidal Curves. Restitution and Translation of different Greek Inscriptions. On the Means of strengthening the Timber-work of Wooden Vessels. On the Action of the Heart and Arteries in the Phenomenon of Circulation. Theory of the Tides. On the Diseases of the chest. On Friction in the Axes of Machines. On the yellow Fever. On the Calculation of Eclipses. Essays on Grammar:—&c. Such a variety of elaborate works seem sufficient to have shut up their author in his study; but, on the contrary, he was to be found in the most brilliant circles in London, delighting his friends with the accomplishments of his mind, and the elegance of his manners. He was a true living library, where an exact, precise, and substantial answer could be given in an instant to every kind of question which could be proposed.

In the year 1814, the studies of Dr. Young were directed to a subject, which has added greatly to his fame, although it has led to much controversy. It was at this time that he began to investigate the lost literature of Ancient Egypt, and discovered the key to the hieroglyphics.

In the year 1814, (says his biographer,) Sir William Rouse Boughton had brought with him from Egypt, some fragments of papyri, which he put into the hands of Dr. Young, the fragment of the Rosetta Stone having about this time been placed in the British Museum, and a correct copy of its three inscriptions having been engraved and circulated by the Society of Antiquaries. Dr. Young first proceeded to examine the enchorial inscriptions, and afterwards the sacred characters, and after a minute comparison of these documents he was enabled to attach some Remarks on Egyptian Papyri, and on the Inscription of Rosetta, containing an interpretation of the principal parts of both the Egyptian inscriptions on the pillar, to a paper of Sir W. Boughton's, published by the Society of Antiquaries, 1815, in the eighteenth volume of the *Archæologia*.

He continued to prosecute these researches with almost incredible toil and activity. In 1815 he wrote on the subject in the *Museum Criticum*, and in 1816 published two letters announcing the progress of the discovery of the relation between the Egyptian character and hieroglyphics, forming the basis of his own inquiries, as well as of the system carried further in its details by M. Champollion, whose attention had long been directed to similar studies.

The whole results of his labours on this subject were first brought out in a complete form in the article EGYPT of *Encyclopædia Britannica*, to which Dr. Young furnished sixty-three articles. scientific, biographical, and literary. In 1817 he paid a second visit to Paris, and renewed his intercourse with Humboldt, Arago, Cuvier and Gay Lussac. In 1818 he was appointed one of the commissioners for considering the state of the weights and measures of Great Britain. In the same year he became Secretary to the Board of Longitude, with the charge of the supervision of the *Nautical Almanac*. This latter appointment was to him a desirable one, and henceforth he had no anxiety to increase his medical practice. In the summer of 1819 he made a hasty tour of Italy, and examined the Egyptian monuments preserved in that country, returning to England by way of Switzerland and the Rhine. In 1821 he made an excursion to Spa and Holland, and in the same year undertook the medical responsibility and mathematical direction of a society for life assurance. This led him into researches in which he took great interest, and produced his Formula for expressing the Decrement of Human Life, &c. In 1823 he again visited Paris, and also published an account of his Hieroglyphical Discoveries. In 1825 he removed from Welbeck Street to a house which he had built in Park Square, Regent's Park, where he continued his favourite pursuits, and expressed himself as having attained the main objects of his desire in this life.

In the summer of 1828 he went to Geneva, and there appeared to suffer an unusual degree of fatigue on slight occasions, and symptoms of age came on him, which contrasted strongly with the freedom from complaints which he had hitherto enjoyed. During his absence the Board of Longitude was abolished, but in many departments of the Admiralty the assistance of men of science was found so indispensable, that a new council of three members was appointed, consisting of Dr. Young, Captain Sabine, and Mr. Faraday.

This change involved Dr. Young in more labour than he could perform without injury to his health, and is thought to have aggravated a complaint which must have been long, though insensibly in progress, and which was now bringing him rapidly to a state of extreme debility. From the month of February, 1829, his illness continued with slight variations till the 10th of May following, when he expired without a struggle, having hardly completed his fifty-sixth year. "His disease proved to be ossification of the aorta, and every appearance of advanced age, not brought on probably by the natural course of time, nor even by constitutional formation, but by unwearied and incessant labour of the mind from the earliest days of infancy." His remains were deposited in Farnborough Church, Kent. Of his acquirements in almost every department of human knowledge, we have endeavoured to give some faint idea; it only remains to add the testimony of his biographer, that in all the relations of private life, Dr. Young was an exemplary character, and his whole career was one of usefulness, and moral rectitude.

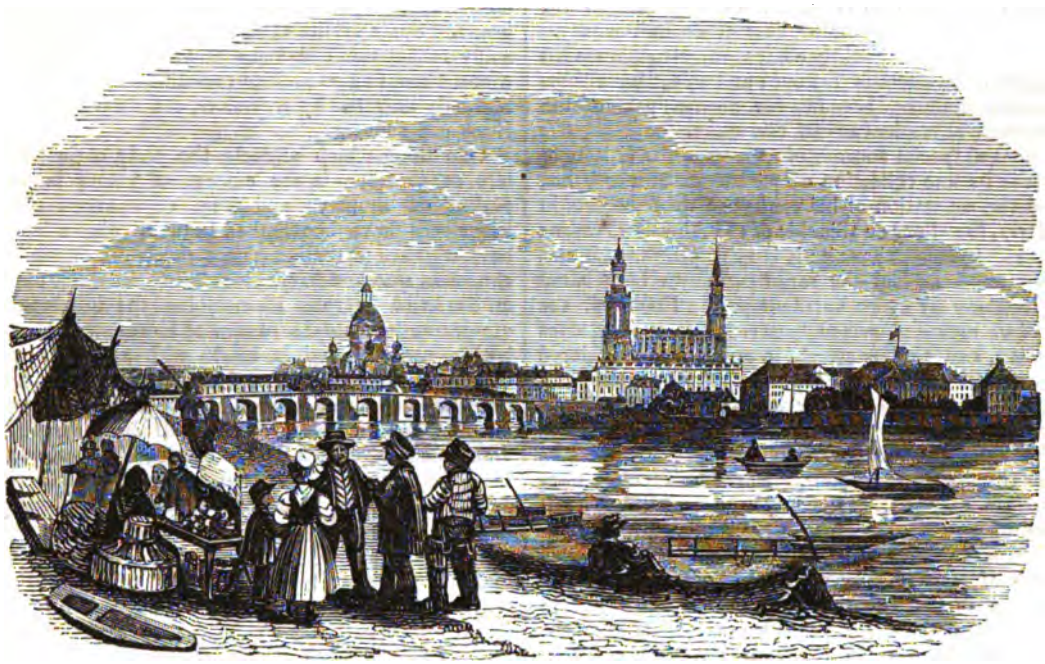
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

Nº 598. OCTOBER 30TH, 1841. {PRICE ONE PENNY.

THE CITY OF DRESDEN.



DRESDEN.

THE kingdom of Saxony, which forms part of confederate Germany, has for its capital, the ancient town of DRESDEN. The Elbe divides the city into two portions, which are connected by a fine bridge, 552 feet long, with 16 arches. The country round has a mixture of romantic nature with the richest cultivation; so that the environs of this city are reputed to be more delightful than those of any other capital of Europe. The approach to the city is on almost all sides by avenues shaded by trees. It stands in a fine plain, which is, for the most part, surrounded by eminences covered with trees, vineyards, or gardens. The sweetness and amenity of its aspect have acquired for it the epithet of the "German Florence."

The heights of Kesselsdorf, in the vicinity of Dresden, were celebrated as the scene of some important battles in the early part of the last century, during which the city suffered severely. The important situation of the city caused a fort to be built there as early as the ninth century. The city was bombarded for nine days by Frederick the Great, in 1760; and it has been exposed to the devastations of war upon other occasions. The Austrians occupied the city in 1809, without injuring it. In the following year they began to pull down the fortifications, but desisted on the breaking out of the Russian war. To the historian, however, Dresden will present its most remarkable feature in being the centre of operations, in 1813, in the great and important contests, when almost all the powers of Europe were arrayed against Napoleon. Besides the political importance of Dresden, as a capital, the possession of the Elbe, by means of some of the most important fortresses, was another motive, which induced Napoleon to place himself with his whole army on the banks of this river; and the entire neighbourhood resembled a great fortified camp, from which he could pour forth his columns, with equal ease, on the chief cities around. The Emperor displayed the most consummate skill in the defences of the city, as a military post. At the final retreat of the French, Dresden received a strong Russian garrison and became the seat of the Russian administration under Prince Repnin. The king of Saxony was twenty months a prisoner of the Allied Powers, and his dominions were then governed by Russian and Prussian authorities. The adherence of this king to the fortunes of Napoleon, though rare and admirable as an instance of political integrity, was disastrous to himself and his monarchy; his dominions were dismembered by the congress of Vienna, and the northern and eastern parts of his territory transferred to Prussia.

When the French retreated from Dresden to Leipsic in 1813, they blew up the central part of the bridge over the Elbe, which was repaired at the expense of the Emperor of Russia.

Dresden has very little external trade or manufacture. It is a place of transit for foreign produce, and has several fairs during the year. The manufactures of mathematical, mechanical, and musical instruments have arrived at some celebrity in this place; together with several other arts and trades; such as the making of porcelain, earthenware, lace, mirrors, and plaited straw. There is a foundry for bomb-shells and cannon, and another for bells: there is also a yearly exhibition of Saxon manufactures. The municipal expenses amount to nearly 7000*l.* a year, and the population may be reckoned at 60,000 souls. As a town, answering to the uses and conveniences of life, this place has been much improved since the war, by the levelling of the fortifications;

whereby the space gained has been used for gardens, promenades, and new buildings.

Excepting the people of Vienna, the capital of Austria, no people of Germany are so fond of being out of doors as the Saxons of Dresden, and no other capital displays so many temptations to allure them; wood and water, mountain and plain, precipice and valley, corn and wine, palace and cottage, seem tossed together in bright confusion, and glowing in a climate, which, north of the Alps, may well be called genial. The rising ground to he south-east of the city, which was the principal scene of the combats and bombardments that terminated in the retreat of the French to Leipsic, is the only part of the environs at all devoid of natural sweetness and beauty.

As the season of Spring comes on, strangers visit Dresden from all parts of Europe; and this city, with its fine sky and scenery, becomes for a great part of the year the general rendezvous of Germany.

One of the especial sources of attraction for visitors at Dresden is its fine collection of pictures. Hence it has acquired the reputation of being the centre of the arts in Germany. No gallery on this side of the Alps deserves, as a whole, to be placed above it: it is gratifying to find that these pictures have had the rare fortune to be treated with reverence by every hostile hand. Frederick the Great, as we before remarked, battered down the churches of Dresden, and laid its streets in ruins, but he ordered his cannon and mortars to keep clear of the picture-gallery. He entered as a conqueror, levied the taxes, administered the government, and, with an affectation of humility, asked permission of the captive Electress to visit the Gallery as a stranger. Napoleon's policy likewise induced him to treat Saxony with great consideration, and he was careful to preserve the pictures unviolated. None of these went to Paris.

Crowds of copyists fill the gallery during the summer months. A sure and lucrative employment is found in making miniature copies of the more celebrated pictures, or individual groups or figures from them. Of the amateur artists many are ladies, and here the pride of rank, which in everything else in Germany is so unyielding, gives way. The countess pursues her task by the side of her more humble companion, who is copying for her daily bread, under the gaze of every strolling stranger. It is not at all uncommon to find ladies repairing to Dresden from distant capitals to spend part of the summer in copying pictures.

This city possesses likewise one of the most complete collections of copper-plates in Europe. This collection contains everything that is interesting in the history of the art, or valuable for practical excellence. It possesses the earliest copper-plate yet known, bearing the date of 1466. A vast quantity of ancient sculptures, and casts in gypsum of other great works, which could not be bought, completes the Saxon school of arts.

Amongst the curiosities of Dresden we must not pass over the treasures of the "Green Vault," of which every Saxon is so proud. Whoever takes pleasure in the glitter of precious stones, and in gold and silver, wrought not only into royal ornaments, but into every form that art can give them, will find much delight in strolling through the apartments of this gorgeous toy-shop. Here are the crowns, jewels, and regal attire of the Saxon princes for ages back. Pearls, and innumerable carvings in ivory are here, and jewelled nick-nacks of all sorts and sizes.

There is also the armoury for ancient weapons, all so complete with reference to the middle ages, that were Europe thrown back by the word of an enchanter, to those times, Saxony could take the field with a duly equipped army sooner than any other power. This place is therefore just what a well-stored armoury must have been in the days of yore. Among the relics kept here is the first instrument with which Schwarz tried his newly invented gunpowder. The fire is produced by friction. A small bar of iron placed parallel to the barrel is moved rapidly backwards and forwards by the hand: above it is a flint, whose edge is pressed firmly against the upper surface of the bar by a spring: the friction of the flint against the bar strikes out the fire, which falls upon the powder in a small pan beneath.

One of the least pleasing features of this gay and elegant capital is the number of condemned malefactors employed in cleaning the streets, fettered by the leg, and kept to their labour by the rod of an overseer and the muskets of sentinels. When not so employed their time is spent in a miserable and corrupting confinement, in dungeons always loathsome, and sometimes subterraneous. Some of the German lecturers on political economy rail at the bad management of English prisons, without seeming to look to faults nearer home, which if, correctly narrated by travellers, are discreditable to any European country.

One thing which attracts the early curiosity of visitors at Dresden, is the custom of young lads singing psalms on Sundays and feast days about the town. Pious men have bequeathed funds to give a number of boys, who are at the same time choristers of the different churches, a cocked hat, a black scarf, and a suit of clothes, on condition of their entertaining the inhabitants with sacred music. Bands of ten or a dozen, with one for a leader, each dressed in black, with a cocked hat and scarf, march slowly about the town, and stopping at every second or third house, sing a psalm. This singing is often very agreeable: the shrill clear voices of the young people, sounding through the streets, have something of simplicity, which oftentimes pleases as much as the multiplied tones and warblings of the royal orchestra.

THE EMIGRANTS' FIRST SABBATH IN AFRICA.

It was, indeed, an affecting sight, to look round on our little band of Scottish emigrants, thus congregated for the first time to worship God in the wild glen allotted for their future home, and the heritage of their offspring. There sat, with his silvery locks, the aged patriarch of the party, with his Bible on his knee—a picture of the high-principled, grave, Scottish husbandman; his respectable family seated around him. There was the widow, with her meek, kind, and quiet look the look of one who had seen better days, but who, in adversity, had found pious resignation—with her three stalwart sons, and her young maiden daughter, placed beside her on the grass. There, too, were others, delicate females—one of them very nearly related to myself—of whom I need not more particularly speak. There was the younger brother of a Scottish laird, rich in blood, but poor in fortune, who, with an estimable pride, had preferred a farm in South Africa to dependance on aristocratic connections at home. Looking round on these collected groups, on this day of solemn assemblage, such reflections as the following irresistibly crowded on my mind:—"Have I led forth from their native homes, to this remote corner of the globe, all these my friends and relatives, for good or for evil!—to perish miserably in the wilderness, or to become the honoured founders of a prosperous settlement, destined to extend the benefits of civilization and the blessed light of the Gospel through this dark nook of benighted Africa?" The issue of our enterprise is known only to Him who ordereth all things well. Having selected one of the hymns of our national church, all united in singing it to one of the old pathetic melodies of our native land. The day was bright and still, and the voice of psalms rose with a sweet and touching solemnity among those wild mountains where the praise of the true God had never, in all human probability, been sung before. We then read some of the most suitable portions of the English Liturgy, and concluded with an excellent discourse from a volume of sermons presented to me on parting by the Rev. Dr. Pringle, of Perth. We had a similar service in the afternoon. While we were singing our last psalm, an antelope stood for a little while on the opposite side of the rivulet, gazing at us with innocent amazement.—PRINGLE'S *African Sketches*.

OPTICAL ILLUSIONS. VII.

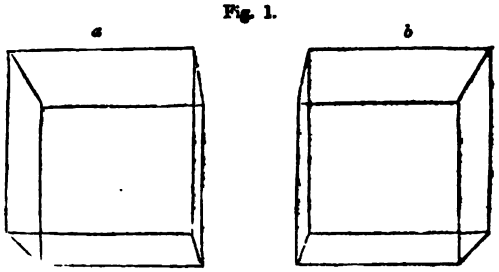
On Binocular Vision.

We now invite the reader's attention to a very curious class of optical illusions, connected with the use of *two* eyes in the process of vision. Under the ordinary sense of the word illusion, it is not usual to apply such a term to the act of seeing; but in fact it is one of the most beautiful of all illusions, viz., the impression on the mind. that two distinct acts of vision, one by each eye, form but one act.

Opticians and anatomists have frequently asked, "Why does not vision with two eyes produce in the mind the idea of a double object? How can single vision result from the use of *two* eyes at once?" It is known that an image of the object is impressed on the retina of each eye; and it appears natural to suppose that the mind would thence recognise two objects instead of one, whenever we look with both eyes at once. This, however, is not the case; and numerous theories have been formed to account for the illusion. Of all these theories that proposed by Professor Wheatstone is the only one which seems to meet all the difficulties of the case. We are strongly disposed to think that it is the correct explanation; and we will endeavour to give a popular sketch of that gentleman's views, as presented in a paper read before the Royal Society three or four years ago.

Professor Wheatstone grounds his explanation upon this proposition,—That in all the ordinary cases of vision with two eyes, the effect produced upon the mind is *compounded* of the two effects which would be produced by each eye separately. Hitherto, inquirers on this subject have been in the habit of assuming that an object presents the same appearance to one eye as to the other; but Mr. Wheatstone's explanation is greatly dependant on the curious fact that the appearance of an object is *not* precisely the same to the two eyes. To shew the nature of the difference, place a small cube immediately in front of the eyes, and at about seven inches' distance from them; shut each eye in succession, and look with the other; the cube will not present the same shape to each eye, but will appear as *a* in the one instance, and *b* in the other, in Fig. 1. They are slightly dissimilar, and this dissimilarity increases as the optic axes

Fig. 1.



converge more rapidly, or, which is the same thing, as the object is viewed at a smaller distance. Supposing the cube to be small—a die for instance—it will be seen on a little attention, that the difference arises from the circumstance, that with the right eye we can see a little of the right *side* of the cube, but not the left side; while with the left eye we see a little of the left side of the cube, and none of the right.

Mr. Wheatstone supposes that our ideas of objects placed at a moderate distance, are formed from the combination of these two images superposed as it were in the mind; and that the chief reason why we do not mistake a picture, however cleverly painted, for the object which it is intended to represent, is, that the image of a picture is exactly the same in both eyes, since the picture does not present *sides* or *bulk*, but only a flat surface; whereas the image of an object is different in the two eyes. When an object is viewed from afar, the same difference does not exist, and a consequence results which we will state in Mr. Wheatstone's own words:—

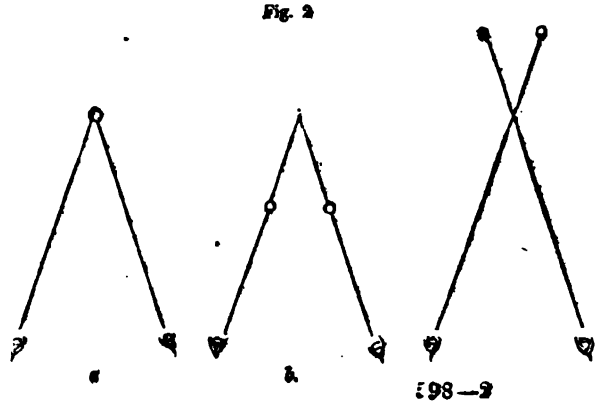
When an object is viewed at so great a distance that the optic axes of both eyes are sensibly parallel when directed towards it, the perspective projections of it, seen by each eye separately, are similar, and the appearance to the two eyes is precisely the same as when the object is seen by one eye only. There is in such case, no difference between the visual appearance of an object in relief, and its perspective projection on a plane surface; and hence pictorial representations of distant objects, when those circumstances which would prevent or disturb the illusion are carefully excluded may be rendered such perfect resemblances of the objects they are intended to represent, as to be mistaken for them; the Diorama is an instance of this. But this similarity no longer exists when the object is placed so near the eyes that to view it the optic axes must converge; under these conditions a different perspective projection of it is seen by each eye, and these perspectives are more dissimilar as the convergence of the optic axes becomes greater.

It will be convenient to give the name of *right image* to the appearance which an object presents when viewed by the right eye, and *left image* to the appearance presented to the left eye. We may then state that in all pictures, the right and left images are alike; that in objects seen from a great distance, the images are so nearly alike that we cannot discern any difference between them; that in objects seen at a short distance, the images are decidedly dissimilar: and that the illusive effects of pictures depend greatly on the distance of the objects which they are intended to represent. A picture of a near solid object *cannot* be made to represent exactly the appearance of the object itself, however consummate may be the skill of the painter; for the right and left images of his picture are similar, while those of the object are dissimilar. The mind does not accustom itself to the image presented by either eye singly, but to both together superposed or combined; consequently a combination of two similar images (the ordinary vision of a picture) cannot exactly resemble a combination of two dissimilar images (the ordinary vision of a solid object).

Mr. Wheatstone states, that no former writer seems to have been aware of this subject, with the exception of the great painter Leonardo da Vinci, who explains why a painter could not represent a small object exactly as it is seen by the eye, because the portion seen by one eye is not the same as that seen by the other. But Da Vinci failed to follow out the fact to its singular consequences.

A very curious question now presents itself. If the right and left images of an object are dissimilar, and a picture fails to be completely illusive because its right and left images are similar, what would result if we place before the eyes two pictures at the same time, one representing the right image, and the other the left image, of any given object? To the solution of this question Mr. Wheatstone directed his attention. It is necessary to make the images of the two pictures fall on similar parts of the two retinæ; and fig. 2. will shew how this may be done in a simple way. Under the ordinary circumstances of vision, the object is seen at the point where the two

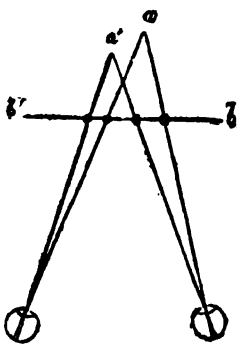
Fig. 2.



axes meet; but two objects may be seen as one, if they are placed one in the direction of each optic axis, at equal distances before or behind their intersection. In all the three cases (fig. 2, *a. b. c.*) the mind recognises but one object. As unpractised persons, however, find it difficult to focalize the eyes properly, Mr. Wheatstone recommends the employment of a pair of tubes, capable of being inclined towards each other at various angles, so as to correspond with different convergences of the optic axes. By the use of such tubes, or by the naked eyes with a little practice, a person might make two objects appear as one, if similarly situated with respect to the converging point of the two optic axes.

Now, if the two objects thus placed, instead of being exactly similar, were perspective projections of the same solid object, the mind will still continue to perceive the object to be single; but instead of a representation on a plane surface, as each drawing appears to be when separately viewed by that eye which is directed towards it, the observer will perceive a figure of three dimensions, the exact counterpart of the object from which the drawings were made. These effects may be illustrated by one or two instances:—If two vertical lines near each other, but at different distances from the spectator, be regarded first with one eye, and then with the other, the distance between them when referred to the same plane will appear different; if the left hand line be nearer to the eyes, the distance as seen by the left eye will be less than the distance as seen by the right. This is exemplified in fig. 3, where *a' a* represent the positions

Fig. 3.



occupied by the two lines; and the points on the cross section *b b* shew the relative distances at which they *appear* apart when seen by the two eyes separately. Now if the lines here spoken of were drawn on two pieces of card, at the respective distances at which they appear to each eye, and these cards be afterwards viewed by the aid of the tubes above alluded to, the observer will no longer see two lines on a plane surface; but two lines will appear, one nearer to him than the other, precisely as the original vertical lines themselves. Again, if a straight line be held before the eyes in such a position that one of its ends shall be nearer to the observer than the other is, each eye, separately referring it to a plane perpendicular to the common axis, will see a line differently inclined; and if lines, having the same apparent inclinations, be drawn on two pieces of card, and be presented to the eyes as before directed, the real position of the original line will be correctly perceived by the mind.

Mr. Wheatstone traces all these effects to the same source as that whence arises a curious appearance observed when a plate of metal, whose surface has been turned on a lathe, is viewed by candle-light. When a single candle is brought near such a plate, a line of light appears standing out from it, one half being above, and the other half below, the surface; the position and inclination of the line changing with the position of the light and the observer, but always passing through the centre of the plate. On closing the left eye the relief disappears, and the luminous line coincides with one of the diameters of the plate; on closing the right eye the line appears equally in the plane of the surface, but coincides with another diameter; on opening both eyes, it instantly starts into relief. The luminous line here spoken of results from the reflection of light from the minutely depressed concentric circles produced by the tool in the operation of turning. The Professor remarks that this appearance must have been observed by many persons, but that none had thought of referring it to its cause; which is exactly analogous to that of the vision of two inclined lines, when each is presented to a different eye focalized in the manner before described.

The difficulty of effecting this focalization with exactness led Mr. Wheatstone to construct a very ingenious instrument called a *stereoscope*, the arrangement and employment of which we shall describe in our next paper on this subject.

"FIFTEEN YEARS AGO."

Oh! tis but "fifteen years ago,"
(How the years fleet fast away!)
That I heard the winds of Autumn blow,
As I hear their voice to-day;

And saw,—as now they meet mine eye—
The bleak trees, stripped and bare,
Lift up their wild arms to the sky,
Like mourners in despair;—

While the leaves—like the hopes of the mourner—dead,
Bestrewed the withered earth;
And I looked on the desolate scene, and said,
With a sorrow akin to mirth,

"I love the pomp of the dying year,"—
And gazed, as oft a child
Hath gazed, they tell us, on a bier,
And then, unconscious, smiled.

What then were the sky and the earth to me,
In their places, foul or fair?
My heart was young, and I thought there would be
Eternal summer there.

But now, as life with the rolling wave
Of each rapid year sweeps on,
All the buoyant swell of hope, that gave
My spirit strength, is gone.

Like the earth and the sky, I seem to bear
Each change the seasons bring;
But oh! I ne'er can hope to share
With them another spring.

Decay for all things!—all alas!—
Now fifteen years have flown—
Reflect, as mirrored in a glass,
An emblem of mine own.

My spring is gone; my summer's sun
Wears Autumn's sombred glow—
Oh! it was not thus my verse had run
But "fifteen years ago."——J. S. B.

THOMAS CURSON, born in Allhallows, Lombard-street, armourer, dwelt without Bishopgate. It happened that a stage-player borrowed a rusty musket, which had long lain leger in his shop: now though his part were comical, he therewith acted an unexpected tragedy, killing one of the standers-by, the gun casually going off on the stage, which he suspected not to be charged. Oh! the difference of divers men in the tenderness of their consciences; some are scarce touched with a wound, whilst others are wounded with a touch therein. This poor armourer was highly afflicted therewith, though done against his will, yea without his knowledge, in his absence, by another, out of mere chance. Hereupon he resolved to give all his estate to pious uses: no sooner had he gotten a round sum, but presently he posted with it in his apron to the Court of Aldermen, and was in pain till by their direction he had settled it for the relief of the poor in his own and other parishes, and disposed of some hundreds of pounds accordingly, as I am credibly informed by the then churchwardens of the said parish. Thus as he conceived himself casually (though at a great distance) to have occasioned the death of one, he was the immediate and direct cause of giving a comfortable living to many.—FULLER.

ON CHESS. No. XX.

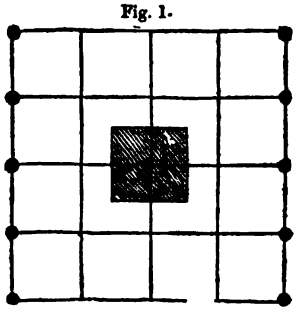
Ancient Games from which Chess is supposed to have been derived.

In two former articles we investigated the powers of the pieces, and endeavoured to afford an easy account of the various methods which have been adopted for obtaining those numerical values which are given to the pieces in elementary works on chess. We propose now to inquire how the pieces became invested with their present powers; and although our information on this subject is not very precise, yet it is sufficiently interesting to form part of the present series.

The Hindoo origin of chess, supported by Dr. Hyde, Sir William Jones, and others, was for a long time credited, until Mr. Christie proposed to consider "whether it be more natural to conceive the game to have been invented by an effort of the mind of one person, and devised, formed, and perfected at one instant of time; or whether it may not be considered probable, that some rude materials existed, which falling into the hands of ingenious and able workmen, at different periods, were variously fashioned by them, and united at last in the elegant structure of the modern game." We propose to give a brief analysis of Christie's attempt to prove "that a game of pastoral origin was already in general use, which being expanded as to the superficies of its *board*, and augmented in the number of its *men*, and varied in the properties of its pieces, might have been fashioned and completed by the ingenuity of the Orientals into the modern game of chess."

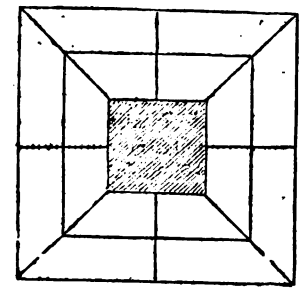
Among the ancient games of skill the one to which writers have referred the origin of chess is the *πεττεια*, or the game of the pebbles, supposed to have been invented by Palamedes at the siege of Troy. From scattered words and phrases in various Greek writers, it is probable that the game was played on a board containing sixteen squares with a central space called *ιερα γραμμη*, the sacred barrier. The game was played by two persons, one being provided with five white pebbles and the other with five black pebbles, arranged at the beginning of the game as in the accompanying figure. Each player endeavoured to cut off, inclose, or block up, his adversary's men. In Constantine's *Lexicon* the "sacred barrier" is thus alluded to:— "The middle line was the extreme boundary beyond which the men could not be moved, and this was also termed the sacred line; wherefore when either of the parties was driven up to this fixed line or mark in the centre of the board, he then moved his piece from it, saying, 'I move my pebble from the sacred.'" The offensive moves seem to have had the following objects: 1, the temporary circumvention, where the pebble was checked between the *sacred* and another pebble; and was then, according to a law of the game, withdrawn with the expression just quoted; 2, the circumvention of any pebble took place between two hostile pebbles; retreat being cut off, such pebble was then taken; 3, each party endeavoured to get beyond the sacred, so as to occupy his adversary's half of the board, and so to crowd his game that no move should be left to him: the game was then finished.

Fig. 1.



There is a game which has been played all over the north of Europe from the remotest antiquity, which Christie supposes to be identical with the Greek game *τριοδιον*, and more ancient than the *πεττεια*, since *depositing* the pebbles seems to be more simple and primitive than moving them. The game is played on a board of the following form, and is known in England by various names, such as, "Ninepenny Marl," "the game of Morris" or "Nine Men's Morris" also Fivepenny Morris," and lastly "Merelles." Some writers state that the game was introduced into this country by the Norman conquerors, under the name of *merelles;* and that this word, which signifies *counters*, was afterwards corrupted into *morals* and *morris*. Others suppose the pastime to have derived the appellation of "Nine Men's Morris" from the different coloured men being moved backwards and forwards as though they were dancing a morris.

Fig. 2.



The scheme or board for the game is frequently chalked on the ground; on barn floors; on the crown of a hat; on the side of a pair of bellows; upon a table; or, (as we have often seen it on Salisbury Plain,) it is cut out in the green sward. Hence the remark of Titania in the *Midsummer Night's Dream:*

> The nine men's morris is filled up with mud,

alluding to the wet season, which had obliterated the rustic merelle board.

Strutt, the historian of the *Sports and Pastimes of the People of England*, gives a figure of the merelle-table as it appeared in the fourteenth century, the lines of which are similar to those in figure 2; the only difference is, that each of the angles is marked by a black spot.

The manner of playing the game is briefly thus:—two persons, each having nine men, different in colour or form, for distinction's sake, place them alternately, one by one, upon the angles or spots; and the object of either party is to prevent his antagonist from placing three of his pieces so as to form a row of three, without the intervention of an opponent piece. If he succeed in forming a row, he takes one of his antagonist's pieces from any part except from a row of three which must not be touched if he have another piece on the board. Every piece that is taken is put into the central square. When all the pieces are laid down, they are played backwards and forwards, in any direction that the lines run, but they can only move from one spot to another at one time. He that takes all his opponent's pieces is the conqueror. The game is subject to slight variations in different counties of England. In Wiltshire, if the losing party have his men reduced to three, they can hop and skip into any vacant place, in order to form a line. However simple this rustic game may appear, much skill is required, particularly in the choice of the first places, so as to enable the player to form the lines as perfectly and as quickly as possible.

The Oriental name for the central space (Fig. 2) is equivalent to the English *pound* or *fold*, and Christie thinks it very probable that it was originally intended to represent something of this kind; for, as the Eastern shepherds amused themselves by playing with the pebbles, whilst they watched their *folds*, they might afterwards have introduced the figure of the fold itself as an ornament to the board, and as a settled place for depositing the pebbles captured during the game.

From a critical examination of the Greek writers, our author concludes, that the game of the pebbles was derived from the original game of the Asiatic shepherds. The pastoral character of this game now became military—the central *fold* was converted into a *sacred*, which acted as a kind of mound or barrier against mutual incursions. In the course of time the game was modified by the use of dice as well as pebbles, and formed

the ancient *pleidon:* the board was now called the *city*, the pebbles *dogs*, and the object of the game was said to be to capture the city: the pieces appear to have been of two colours, and one pebble being circumvented by two others of an opposite colour was captured. There appear to have been twelve points on each side of the board, and fifteen men of each colour; but here, as the conclusions of our author lead us rather to the game of backgammon than to chess, we omit much of his theory.

The steps by which our author supposes the advance to have been made from this primitive game to that of chess, (in which there is, *first*, not a sacred line, but a royal line behind each row of pebbles or pawns, *secondly*, a king whose person is sacred, and, *thirdly*, officers to attend him,) are so very ingenious that we quote the passage at full:

I have before explained, the meaning and office of the *sacred mark* in the *πεττεια;* and have shown that, as the object of the game was *to* effect a circumvention of any one pebble, between two of the adverse party, so, the same could be produced by forcing a pebble into an intermediate station between the *sacred* and a hostile piece. This was an advantage only to be found in the centre of the board. But the purpose of the sacred was not complete; for the assistance of the sacred would often have been desirable for effecting a circumvention in the distant parts of the board. *Hence arose the idea of making it moveable.* By its power of co-operating with a pebble in circumventing, it was already endowed with the properties of a piece; and it was therefore no great stretch of innovation to raise it to the dignity of one, thereby giving it in form what it already possessed virtually. As the advantages of it, in its first inactive state, had been common to both, so it was now but fair that *each party should have a pebble endowed as the ἱερα γραμμη had been.* To distinguish it from the rest, it was perhaps called the "*inviolable pebble.*" As the *central mark* was *sacred*, so was this *inviolable;* and hence the custom of NEVER TAKING THE KING AT CHESS. As it would not have been prudent to expose the sacred person of this pebble in the front line, and the scanty dimensions of the board would not allow of the pebbles being obtruded further upon the middle of the board, *a place was assigned to it in the centre of an* ADDITIONAL *or* REAR *rank.* An imperfection yet remained. The properties of the sacred were twofold,—*inviolability*, and the power of making any pebble *recede* from it. We have only found a representative for its first property. The whole virtue of the sacred was to be called into action. The inviolable pebble was the solitary occupier of the rear rank:—it was thought proper that *attendants* should be given to the right and left of it, who should share amongst them the *offensive* powers of the sacred, which it might not have been so consistent with the character of the first dignified pebble to assume. The power of causing to *retire*, was therefore vested in the companion of the inviolable piece; and hence we have derived the custom of *checking.* And with all this, the original object of the *πεττεια* was still retained, namely, the BLOCKADE; to which the *checkmate* of the modern chess is certainly analogous; only that in the early game it was attempted indiscriminately upon the pebbles in general; and in the improved game, the effect of it is exclusively directed to the most conspicuous piece.

The most important feature in this ingenious argument is the metamorphosis of the sacred mound, barrier, or temple, into a "king," endowed with the inviolability of the sacred (that is, not subject to capture); but conferring the repelling power of the sacred on the persons of certain officers or superior pebbles provided for that purpose. In modern chess the king has little or no repellent power; for he cannot put himself into check, while all the other pieces may do so. The sacred being thus converted into an inviolable piece, and four officers being created in order to repel attack, and guard the person of the king, the central's sacred was removed, and an additional line or row of points was added behind the common pebbles or pawns. Doubling some of these officers, so as to increase the number to eight, and increasing the number of single pebbles, or pawns from five to eight, are regarded as subsequent innovations.

The learned inquiries of our author tend to show that the Scythians, (the ancestors of the present Tartars,) occupying the desert tracts eastward of the Caspian, were the original inventors of the game from which chess has been produced by a regular series of improvements and modifications made during three thousand years: therefore that the game existed long before the siege of Troy; and that it thence spread westward to Greece, south-west to Persia, south-east to India, and east to China; and that in each country it received certain modifications and additions.

The game was gradually introduced into Rome, and probably formed the *Ludus Latrunculorum.* The object of this game, and the method of playing it, were similar to the *πεττεια*, except that there was no *sacred;* and that the power of *checking* was lost by the absence of the central space. Hyde is of opinion that the Ludus Latrunculorum greatly resembled the modern draughts, in that the pebbles moved diagonally, made captures by leaping over the pebbles of the antagonist, and that they were crowned. On these points Christie is at issue with Hyde, and he also objects to the interpretation of Ovid by Daines Barrington, that the pieces were shaken like dice instead of being moved like draught-men.

The Chinese chess is a contest between two small bands of soldiers on the banks of a river: to these a number of pieces is added, the chief office of which is to defend the general, and to capture straggling opponents. The pieces and men, as in the ancient *πεττεια*, have no distinction as to form: they are flat counters of ivory, an inch in breadth, and a quarter of an inch in thickness, and are distinguishable from each other only by means of certain lines marked upon them.

Christie is of opinion that the Hindoo who, thirteen centuries ago, is said to have invented chess, borrowed the ancient game from the Tartars, who were, and still are, the links of communication between all the nations of Asia, and gave to it some of the modifications already alluded to. The Chinese game in which the combatants, five on each side, fight on the opposite banks of a symbolical river, is supposed by our author to be a more primitive form than the Hindoo, derived from the Tartars, and subjected to less alteration. Mr. Davis, in his recent work on China, says,—"The Chinese chess differs in board, men, and moves, from that of India, and cannot in any way be identified with it, except as being a game of skill, and not of chance."

IT must be confessed, from melancholy experience, that a speculative acquaintance with the rules of duty, is too compatible with the violation of its dictates, and that it is possible for the convictions of conscience to be habitually overpowered by the corrupt suggestions of appetite. To see distinctly the right way, and to pursue it, are not precisely the same thing. Still nothing in the order of means promises so much success as the diligent inculcation of revealed truth. He who is acquainted with the *terrors of the Lord*, cannot live in the neglect of God and religion with present, any more than with future, impunity; the path of disobedience is obstructed, if not rendered impassable; and wherever he turns his eyes he beholds the sword of Divine justice stretched out to intercept his passage. Guilt will be appalled, conscience alarmed, and the fruits of unlawful gratification embittered to his taste.—ROBERT HALL.

OF the great number to whom it has been my painful professional duty to have administered in the last hours of their lives, I have sometimes felt surprised that so few have appeared reluctant to go to "the undiscovered country, from whose bourne no traveller returns." Many, we may easily suppose, have manifested this willingness to die from an impatience of suffering, or from that passive indifference, which is sometimes the result of debility and extreme bodily exhaustion. But I have seen those who have arrived at a fearless contemplation of the future, from faith in the doctrine which our religion teaches. Such men were not only calm and supported, but cheerful in the hour of death; and I never quitted such a sick chamber, without a wish that my last end might be like theirs.—SIR HENRY HALFORD.

RURAL SPORTS FOR THE MONTHS.

OCTOBER.

See! from the brake the whirring pheasant springs,
And mounts exulting on triumphant wings:
Short is his joy; he feels the fiery wound,
Flutters in blood, and panting beats the ground.
Ah! what avail his glossy, varying dyes,
His purple crest, and scarlet-circled eyes,
The vivid green his shining plumes unfold,
His painted wings, and breast that flames with gold!—Pope.

Our tables are supplied with a very delicate article of food by means of the sport for which this month is distinguished. Pheasant-shooting commences on the 1st of October, and these birds, which are no less remarkable for the elegance of their forms than for the beauty of their plumage, are also highly prized in an economical point of view in all the countries where they are found. As an ornament to parks and thickets they are unrivalled among British or naturalized species, and in the rich and glowing colours of their plumage they seem to belong to another and a more brilliant clime.

Pheasants are in general shy and solitary birds, frequenting the thickest coverts. Spaniels are therefore usually employed by the pheasant-shooter, and are required to be strong, short on the legs, and courageous; since the thickness of the coverts will oppose, and sometimes overpower any but the strongest and best-made dogs. Pointers, beagles, and even terriers, are also used in this sport, but the nature of the locality will best determine the sort of dogs to be employed. Pheasant-shooters, in general, assemble early, and after searching the stubbles of wheat, barley, and bean-fields, proceed to the neighbouring woods. A foggy day is not deemed unfavourable to the sport, for pheasants are apt to wander from their close retreats in such weather, while in bright sunshine they keep mostly to the depth of the woods. They are often spoken of as birds of easy conquest, on account of their size and the slowness of their flight, and they have even been called stupid, because when roused, one of them will often perch on a tree, and have its attention so riveted on the dogs as to allow the sportsman to approach very near. The old birds, however, have been observed to have recourse to various stratagems, before they have been compelled to take wing, and when they rise, the whirring noise they make with their wings, and the disturbance of the leaves, through which they are making their way, is so startling to the inexperienced hand, that many a young sportsman finds his first attempts at pheasant-shooting far less easy of accomplishment than he had been led to expect. In October the trees are so full of foliage, that it is a difficult and wearisome task to beat the woods for pheasants, in addition to which the birds often rise without being seen, and when seen and shot, they are frequently lost, or the search after them occupies a considerable time. Shooters therefore endeavour to meet with them in potatoe or turnip-fields, deep stubbles, and rushy fields, near covers, but especially under hedges, holly-trees, or in coppices, where they are generally pointed by the dogs, and the greater part of them being young birds, they are easily killed. November is considered by many sportsmen as the month in which pheasant-shooting is to be had in perfection. The leaves have then fallen from the trees, and no longer obstruct the view of the rising bird, the pathways in the woods are more easily traversed, and the birds themselves are full grown, and in better condition than during the preceding month. But these advantages may be looked on as in some measure counterbalanced by the increased wariness of the birds, and their comparative scarcity after the earlier shootings have thinned their numbers, and have taught those that remain to flee the report of the destructive gun.

It is only on particular occasions that sportsmen intentionally destroy the hen-pheasant. It seldom happens that the hens become too numerous, and as they are easily distinguished from the male birds, they are generally spared. A conventional understanding was formerly entered into, that a fine of half-a-guinea should be paid to the keeper of the manor whenever a hen-pheasant was killed. This is frequently evaded, but is nevertheless a wise regulation. It is thus noticed by the poet Pye:—

> But when the *hen* to thy discerning view,
> Her sable pinion spreads, of duskier hue,
> The attendant keeper's prudent warning hear,
> And spare the offspring of the future year;
> Else shall the *fine*, which custom laid of old,
> Avenge her slaughter by the forfeit gold.

The Common Pheasant (*Phasianus Colchicus*, Linn.,) is considered as the type of the genus *Phasianus*; and though not originally British is completely naturalized in our country, and adapts itself with facility to our climate, as it does to that of most other temperate regions of the earth where it has been introduced.

It seems generally admitted that the pheasant was originally brought from the banks of a celebrated river in Asia Minor. This river is in ancient Colchis, and was once of so much importance that many towns were erected on its banks, and one hundred and twenty bridges crossed its waters, in different parts of its course. Its ancient name was *Phasis*, but it is now called the *Fax*, and sometimes the *Rion:* the Russians are now entirely in possession of its navigation. The ancient Greeks, we are told, in ascending this stream were attracted by the beauty of the birds which they saw in great numbers on its banks, and soon secured to themselves this valuable addition to their luxuries. Thus pheasants were rapidly introduced to the southern countries of Europe, and generally made part of the expensive and superabundant repasts of the ancients. Heliogabalus, in his ostentatious folly, is said to have fed the lions in his menagerie with these birds. The banks of the Phasis are still, as in ancient times, remarkable for the number of fine pheasants to be seen there. The name of these birds, as it is evident, is derived from that of the river: in Italy they are called *Fasiano*, in France, *Faisan*. The time of their introduction into Great Britain is uncertain. In the time of our first Edward the price of a pheasant was four-pence, but we must remember the superior value of money in those days, and also the rate at which other provisions were sold. For instance,—during the same reign we find that wheat was sold at one shilling and eight-pence the quarter. A receipt "for to boile Fesant" is also found in a book stated to have been compiled by the master-cook of Richard the Second, and this proves the bird to have been known as early as 1381.

The accurate description of the common pheasant by Bewick need only be compared with the reality, to prove its faithfulness. According to this Naturalist the bird is two feet eleven inches in length. The bill is of a pale horn colour; the nostrils are hid under an arched covering; eyes yellow, and surrounded by a space, in appearance like scarlet cloth, finely spotted with black; immediately under each eye is a patch of short feathers of a dark glossy purple; the upper parts of the head and neck are deep purple, varying to glossy green or blue; lower parts of the neck and the breast reddish chestnut, with black indented edges; the sides and lower part of the breast the same, with pretty large tips of black to each feather, which in different lights vary to a glossy purple; the under parts of the body are dusky; the back and scapulars beautifully variegated with black and white, or cream-colour speckled with black, and mixed with deep orange, all the feathers edged with black; on the lower part of the back is a mixture of green; the quills are dusky, freckled with white; the two middle feathers of the tail are about twenty inches long, the shortest on each side less than five, of a reddish brown marked with transverse bars of black· legs dusky, with a short blunt

spur on each, but in some old birds the spurs are as sharp as needles; between the toes there is a strong membrane. The female is less, and does not exhibit that variety and brilliancy of plumage which mark the male; the general colours are light and dark brown, mixed with black, the breast and belly finely freckled with small black spots on a light ground; the tail is short, and barred with black somewhat like that of the male; the space round the eye is covered with feathers.

The common pheasant is the only one of its kind which has multiplied freely in our island. The beautiful natives of China, the golden and silver pheasant, are confined to parks and aviaries. The hen pheasant makes her nest on the ground, and lays from twelve to fifteen olive-coloured eggs, which are smaller than those of the domestic hen. The incubation lasts about three weeks; at the expiration of which time the young break the shell, and follow their mother like chickens.

The eggs are sometimes destroyed in mowing the clover near the woods which pheasants frequent, and of those which are hatched it is reckoned that one-third never attain their full growth, for many die in their first moulting, and numbers more in a disorder of the trachea, commonly called "gapes." This disease is occasioned by an intestinal worm, which adheres to the inner surface of the wind-pipe, and causes death by suffocation, sometimes arising from inflammation of the part, sometimes by actual obstruction. Fumigation by tobacco, when carefully employed, has been found to cure this disorder, but a simpler means of cure in the case of domestic poultry, amongst whom the disease is common, is to put a pinch of common salt far back in the mouth of the bird so as to reach the upper part of the trachea.

These birds have always shown a remarkable timidity and indisposition to become domesticated like other gallinaceous poultry. Mr. Waterlow has the following remarks on this subject:

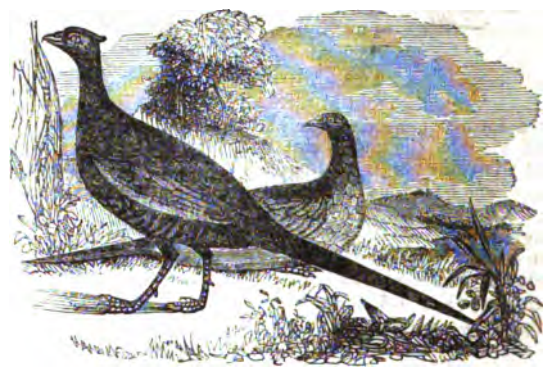
Notwithstanding the proximity of the pheasant to the nature of the barn-door fowl, still it has that within it, which baffles every attempt on our part to render its domestication complete. What I allude to is a most singular innate timidity, which never fails to show itself on the sudden abrupt appearance of an object. I spent some months in trying to overcome this timorous propensity in the pheasant, but I failed completely in the attempt. The young birds which had been hatched under a domestic hen soon became very tame, and would even receive food from the hand, when it was offered cautiously to them. They would fly up to the window and feed in company with the common poultry. But if any body approached them unawares, off they went to the nearest cover with surprising velocity. They remained in it till all was quiet, and then returned with their usual confidence. Two of them lost their lives in the water by the unexpected appearance of a pointer, while the barn-door fowls seemed scarcely to notice the appearance. The rest took finally to the woods at the commencement of the breeding season.

Yet when pheasants are in the constant habit of being attended in the covers by a keeper, they attend to his whistle and come in flocks to be fed; but this is during severe weather and when they are pressed by a scarcity of food.

Pheasants are very general feeders: blackberries, sloes, haws, grain, seeds, and tender leaves are eaten by them, together with a great number of insects. The hen bird when kept in confinement will lay many eggs, but does not dispose them properly in a nest or sit upon them. The eggs are therefore generally placed under a common hen, and when they are hatched the young are reared in the following manner. During the first month their food consists of hard boiled eggs, crumbs of bread, and lettuce leaves, well mixed, with an addition of the eggs of meadow-ants. This food must be given frequently and in small quantities. Every kind of moisture is hurtful to them at this early age, and it is therefore necessary to keep them without water, and never to let them go abroad until the dew is dried up. The place in which they are kept, must be very clean, and they should be taken in before sunset. In the second month they may receive more substantial food, such as wheat, barley, ground beans, and a variety of small insects, with the eggs of wood-ants They must now have access to small heaps of fine sand, or of dry earth, that they may rid themselves of the vermin with which they begin to be infected. Clean water must also be given to them frequently. In the third month the young birds may be carried, with the crib, into the fields, if possible where there is white clover, the seeds of which are found to strengthen them and forward their growth. They must at first be fed in the field with their usual food, but the quantity may be daily diminished, so that they may learn to depend more and more upon their own resources, and become better acquainted with the country. After a time they will grow as wild as those bred in the woods, and will no longer require to be provided for by those who took the trouble to rear them.

It has been found easier to collect pheasants together on an estate, than to keep them there, when collected. They often leave the place where they have been bred in search of food that is congenial to them: on this account it is found necessary to supply the covers with a variety of food, and to take care that water is also at hand. Mr. Yarrell mentions a mode of inducing them to stay at home which is occasionally adopted, *i. e* sowing in summer, beans, peas, and buckwheat mixed together, and allowing the whole crop to remain standing on the ground. For winter feeding, cart-loads of raw potatoes are occasionally driven into the covers and scattered about by hand.

We cannot close our notices of the pheasant without mentioning the rare species of this genus of which a specimen was exhibited some few years ago in the Zoological Gardens, Regent's Park. It is a native of some parts of the Chinese Empire, but is very rare in Pekin. The specimen alluded to was found on the snowy mountains of Surinagur, and was called *Doomdurour* or Long Tail. It was a most beautiful bird, and the tail-feathers were of the extraordinary length of five feet six inches. This species is called, from the name of the gentleman who first introduced it into Europe, "*Reeves's Pheasant.*"



PHEASANTS.

PERHAPS in no trade has the division of labour been successfully carried to so great an extent as in that of watch-making. In an examination before a committee of the House of Commons, it was stated that there are a hundred and two distinct branches of this art, to each of which a boy may be apprenticed.—G. POULETT SCROPE.

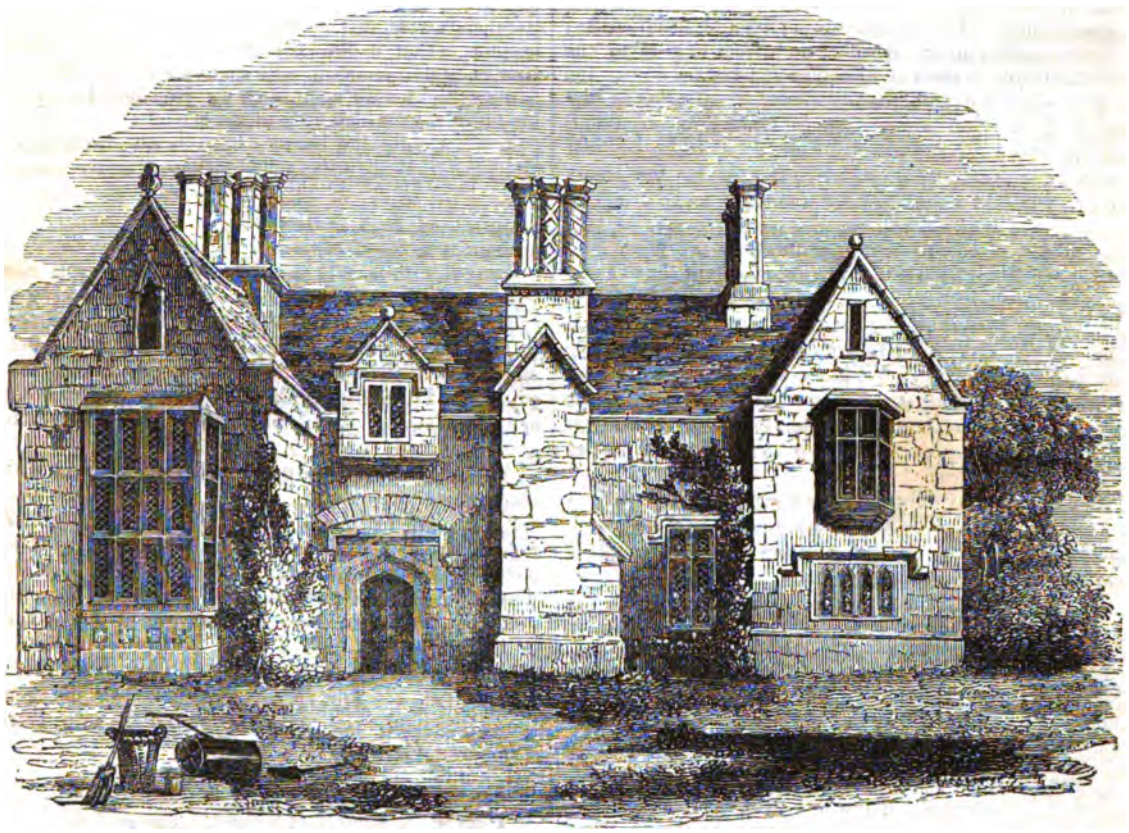
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 599. SUPPLEMENT, OCTOBER, 1841. { PRICE ONE PENNY.

THE HOUSES OF ALL NATIONS. II.



OLD ENGLISH MANOR HOUSE.

On a former occasion, (Vol. XV., p. 33,) we presented a brief view of the rude habitations of mankind, and stated that the transition from these to the comforts of a modern house was by no means abrupt; that a wide interval existed between them, which could only be filled up by tracing the progress of civilization in various countries through successive ages. A portion of this great and important subject, including ARCHITECTURE, has already occupied three Supplements, (Vol. XVI., pp. 121, 209, and 249,) and we now propose to conclude with a few rough sketches of the houses of those nations which have made considerable advances in the arts of life.

It will be necessary to remark, that our object does not include a description of temples, churches, prisons, public offices, hospitals, &c.; but the homes, the domestic arrangements, of the middle classes of society. As the exhibition of architectural taste is more displayed in what are called public buildings than in private houses, we shall not find it necessary to dwell at much length on architectural details; but shall chiefly direct our attention to those arrangements by which the domestic comfort of the interior, rather than the beauty of the exterior, is secured. Royal palaces will not occupy much of our attention, for it is well known that such edifices partake less of the peculiar character of the people, than do dwellings of more humble pretensions. The palaces of the sovereigns of Europe, whatever differences they may present in external architecture or in dimensions, very much resemble each other in the costly decorations of the interior.

1. HOUSES OF THE ANCIENTS.

The nature of the details which the ancient classical writers have handed down to us, is not such as to give us much insight into their dwellings and domestic arrangements. Wars and tumults, ambitious projects, and contests for civil power, were unhappily so prevalent, that the "homes" of the ancients are but sparingly alluded to, and that in such form as little enables us to form a clear conception of them. There were, however, some distinguished men who did not disdain to leave on record something which would shew us what their dwellings were. Among this number was Pliny the younger, whose letters on various subjects, and to various persons, have been handed down. Pliny has left a singularly minute description of his summer villa in Tuscany. It is too long to present verbatim, but as it is of importance, in illustrating the arrangement of the house of a Roman gentleman, we will give a portion of it.

"My villa is so advantageously situated, that it commands a full view of all the country round; yet you approach it by so insensible a rise, that you find yourself upon an eminence, without perceiving you ascended. The exposition of the principal front of the house is full south, and seems to invite the afternoon's sun in summer (but somewhat earlier in winter) into a spacious and well proportioned portico, consisting of several members, particularly a porch built in the ancient manner. In the front of the portico is a sort of terrace, embellished with various figures,

and bounded with a box hedge. At the extremity of this portico stands a grand dining-room, which opens upon one end of the terrace, and such parts of the house which project forward, together with the woods inclosing the adjacent hippodrome. Almost opposite to the centre of the portico, stands a square edifice, which encompasses a small area, shaded by four plane trees, in the midst of which a fountain rises, from whence the water, running over the edges of a marble basin, gently refreshes the surrounding plane trees, and the verdure underneath them. This apartment consists of a bed-chamber, secured from every kind of noise, and which the light itself cannot penetrate; together with a common dining-room, which I use when I have none but intimate friends with me. A second portico looks upon this little area, and has the same prospect with the former I just now described. There is, besides, another room, which, being situated close to the nearest plane tree, enjoys a constant shade and verdure: its sides are incrusted half way with carved marble; and from thence to the ceiling a foliage is painted with birds intermixed among the branches, which has an effect altogether as agreeable as that of the carving; at the basis, a little fountain, playing through several small pipes into a vase, produces a most pleasing murmur.

"From a corner of this portico you enter into a very spacious chamber, opposite to the grand dining-room, which, from some of its windows, has a view of the terrace, and from others, of the meadow; as those in the front look upon a cascade, which entertains at once both the eye and the ear; for the water, dashing from a great height, foams over the marble basin that receives it below. This room is extremely warm in winter, being much exposed to the sun; and in a cloudy day the heat of an adjoining stove very well supplies his absence. From hence you pass through a spacious and pleasant undressing room, into the cold bath-room, in which is a large gloomy bath: but if you are disposed to swim more at large, or in warmer water, in the middle of the area is a wide basin for that purpose, and near it a reservoir from whence you may be supplied with cold water to brace yourself again, if you should perceive you are too much relaxed by the warm. Contiguous to the cold bath is another of a moderate degree of heat, which enjoys the kindly warmth of the sun, but not so intensely as that of the hot bath, which projects farther. This last consists of three divisions each of different degrees of heat: the two former lie entirely open to the sun; the latter, though not so much exposed to its rays, receives an equal share of its light. Over the undressing room is built the tennis court, which, by means of particular circles, admits of different kind of games. Not far from the baths is the staircase leading to the inclosed portico, after you have first passed through three apartments. . . . . At one end of the inclosed portico, and, indeed, taken off from it, is a chamber that looks upon the hippodrome, the vineyard, and the mountains. Adjoining is a room which has a full exposure to the sun, especially in winter; and from whence runs an apartment that connects the hippodrome with the house. On the side of the house rises an inclosed summer portico, which has not only a prospect of the vineyards, but seems almost contiguous to them. From the middle of this portico you enter a dining-room, cooled by the salutary breezes from the Apennine valleys; from the windows in the back front, which are extremely large, there is a prospect of the vineyards; you have also another view of them from the folding doors, through the summer portico. Along that side of this dining-room, where there are no windows, runs a private staircase for the greater convenience of serving at entertainments. At the further end is a chamber, from whence the eye is pleased with a view of the vineyard and of the portico. Underneath this room is an inclosed portico, somewhat resembling a grotto, which, enjoying in the midst of the summer heats its own natural coolness, neither admits nor wants the refreshment of external breezes. After you have passed both these porticoes, at the end of the dining-room stands a third, which, as the day is more or less advanced, serves either for winter or summer use. It leads to two different apartments, one containing four chambers, the other three; each enjoying, by turns, both sun and shade."

In another villa which Pliny had a few miles from Rome, the entrance was through a portico into a central court, and from thence another passage led into a large hall: on every side of this wall were either windows or doors leading to various apartments. On one side of the hall was a large family room and another which Pliny used as his library and study, together with a bed-room, and entrances to rooms belonging to the slaves or servants. On the other side of the hall were doors leading to the baths and many other apartments.

The excavations which have been made at Pompeii shew that the Roman dwellings were often very considerable in extent, and provided with numerous offices and outhouses. Baths were by no means an unusual adjunct to a house, and some of them were constructed with great ingenuity, so as to afford a supply of hot, warm, and cold water, to the different rooms appropriated as bath-rooms. This custom, of providing baths for frequent use, was carried to an extent that we cannot properly appreciate in England. Our humid climate affords us but little means of estimating the exquisite luxury which a bath affords to dwellers in warm countries, where the powerful heat of the sun during the day would enervate the body, if not refreshed by a bath. As there was a great similarity among the dwellings of the ancients, a short description will suffice. Amongst the Jews, Greeks, and Romans, houses were flat at the top, so that persons might walk upon them; and usually had stairs on the outside, by which they might ascend and descend without coming into the house. Each house, in fact, was so laid out that it inclosed a quadrangular area or court; this court was exposed to the weather, and being open to the sky, gave light to the house. This was the place where company was received, and for that purpose it was covered with mats or carpets for their better accommodation. It was paved with marble or other materials, according to the owner's ability, and provided with an awning of cloth or vellum to shelter them from the heat and vicissitudes of the weather. This part of their houses, called by the Romans *impluvium* or *cava ædium*, was provided with channels to carry off the water into the common sewers. The top of the house was level, and covered with a strong plaster by way of terrace.

2. Houses of England.

We shall now direct our attention to modern times, and take a rapid glance at the most striking differences that exist between the dwellings of different countries. We shall begin with our own country, as it will enable us better to understand the construction of others.

By dwelling in a house surrounded by other similar houses, we are not unlikely to forget altogether what are its principal features as compared with those of other countries:—there is no lack of instances in which extreme familiarity with a subject induces a sort of ignorance of it. Let us then examine the dwelling of an Englishmen in moderate circumstances. In the first place we find that,—unlike the houses of old,—there is no central court surrounded by buildings: ground is too valuable to allow space for such a form of houses. The roof is not flat: our rainy climate presents us with but few inducements to visit the house-top. The windows are not concealed from without, and made to open into the central court: jealousy and suspicion are not English characteristics in these matters. If we were to go on, step by step, making comparisons thus between an English house and an Oriental one, (for the latter at the present day very much resemble what the houses of the ancients used to be,) we should find that those differences are not the result of mere caprice, but have a foundation in the habits of the people, the extent of room compared with the number of inhabitants, or the climate of the country.

A modern London private house is generally built of brick, and has four or five distinct stories, with one staircase common to them all. These houses are not detached, but, from the value of land, are built adjoining one another; sometimes thirty or forty without any interruption. In the outskirts of London, where land is not quite so valuable, the wealthy citizen builds his villa, detached from others of a similar kind, and surrounded by a little garden. These are often made to assume something like the appearance of cottages,—and "Rose Cottage,"—"Lavender Cottage,"—"Pleasant Retreat," &c., written up at the gate, indicates that the owner *wishes* to consider himself in the country. It must be owned that in many instances there is a good deal of the "pride of humility" in these mock cottages; although in others, much taste and good arrangements are displayed.

The superior classes of shops in our large towns do not greatly differ from private houses, for all except the ground-floor is arranged as in a private house. The commercial

establishments connected with wholesale trade are altogether different buildings. The domestic rooms are few in number, and principally devoted to the junior partners of a firm; for it is one of the points of ambition in a wholesale trader to have a country house (or cottage) to retire to when the business of the day is concluded. Such is the case to a remarkable extent in the city of London: foreigners would be surprised, did they know how few wealthy families have their home,—their living and sleeping rooms,—within the boundaries of the city.

When we leave the busy scenes of our great towns and extend our view to the country, we find every kind of dwelling, from the palace-like Chatsworth downward, including the manor house of the "country squire,"—the newly sprung-up country house of the merchant,—and the substantial and old English dwelling of the farmer. In Loudon's *Encyclopædia of Cottage Architecture* is given a *beau ideal* of an English country house,—that is, a detailed description of a country residence for an English gentleman, comprising the principal features which distinguish the best kind of country villas in this country. We cannot do better, perhaps, than give an outline of this description,—premising, that the house is not so much the palatial mansion of a peer, as the villa or mansion house of a "country gentleman."

The style of such a villa is the "old English," as being more picturesque and ornamental,—as according best with rural scenery,—and as admitting of any form most suitable for the various offices and servants' apartments:—the Grecian style, adopted under such circumstances, would be an application of architectural rules to purposes for which they were not intended. The villa is therefore in the Elizabeth style, and the ground-plan somewhat in the form of the letter H. The front presents a centre and two projecting wings: the centre containing the hall and dining-room, with a gallery and staircase behind them. One wing is occupied by the drawing-room and library, with a saloon between them. The other wing contains a sitting room, and offices for the upper servants: the inferior offices being in the basement, or in a distinct part of the building. The principal front is ornamented: in the centre is a porch of two stories; and the wall on each side (broken into compartments by pilasters, &c.) contains large mullioned windows; with a battlement or parapet at the top, decorated with busts, urns, heraldic ornaments, &c. Each end of the projecting wings presents a bay window, square or semicircular in form, with balustrade or stone covering above. The high and steep roof is decked with chimneys of various forms and heights; and in the centre is the tower over the grand staircase; its cupola roof terminating in a rich lantern, and supporting a weathercock or dwarf spire.—The four distinguishing features of this exterior are, the projecting wings, the high roof, the numerous chimneys, and the lofty staircase tower.—Outside one of the wings of the house is a terrace, with a handsome balustrade, and an entrance is gained to this terrace by a door from the saloon.

The porch of the house is raised a step or two, and is ornamented in its principal parts, and contains seats for servants, &c. From the porch we proceed to the entrance hall, which corresponds in style with the size of the building, and is more lofty in English than in Grecian forms of villa. The hall looks as if meant for something more than the mere entrance to the house; for in the old English times, when the Baron was surrounded by his retainers, the hall was the apartment in which all dined,—high and low. The hall is furnished with old oak chairs and benches, a high table across the upper end, and other tables in other positions round the sides of the hall. This is the place, too, for the armour, the defensive arms, the hunting implements, the bows and arrows, the fishing tackle, the stags' horns and other trophies of the chase. The floor is of stone, not covered by any carpet: and the room is warmed either by hot air (a modern invention), or by heaping logs of wood on the large open fire-place at one side of the hall. From this hall there is a grand entrance to the principal apartments, and a humbler one to the servants' offices.

From the hall we proceed to the gallery beyond it. This gallery is a kind of passage leading to the principal apartments. On one side it leads to the saloon, dining-room, &c.: on another to the servants' offices: and in another to the grand staircase. The saloon is a sort of vestibule to the living rooms, having on one side a door leading to the dining-room, on another a door leading to the drawing-room, on another windows which open on to the terrace and garden. The saloon is often used as a music room, and is therefore arranged appropriately, in being nearly divested of furniture: indeed if it were not so employed, its general use is not of a kind to render much furniture necessary.

The drawing-room is the most elegant apartment in the house, as may be expected from the mode in which it is employed. This room is of noble proportions, and has a bay or projecting window at one end: there are also windows on one of the other sides, looking out into the terrace and garden, and opposite these windows is the fire-place. The ceiling is of lace-work stucco, interspersed with shields of the family arms. This room contains such of the best pictures belonging to the family as may be of small size. In the pier between the windows is a large looking-glass, reaching nearly to the ceiling.

From the drawing-room we proceed across the saloon to the library, the general arrangement of which is more sombre and sedate than that of the drawing-room, but the size of the rooms is nearly equal. The walls are of course chiefly occupied by cases for books, maps, &c., and those parts which are not so occupied are painted or papered of some subdued colour, so as not to give a gaudy effect to a room devoted to study. A pair of globes, reading-desks, library table, &c., are arranged in this room. Such a room is a general place of reception for gentlemen during the earlier hours of the day.

The dining-room is situated near the hall. The walls are of old oak wainscot, and are nearly covered with pictures, this being the chief depository of the family pictures, unless a gallery be kept for their reception. The large fire-place is provided with "dogs" for the reception of the logs used as fuel. The tables, sideboards, cellarets, "dumb-waiters," &c., necessary to such an apartment, we need not descant upon. Except in very large houses, the dining-room is generally the breakfast room for the family.

The private study is a room differing from the library in this, that although both are intended for study or business, the library is open to the ladies as well as the gentlemen, whereas the study is the room in which the "squire" transacts his various affairs with steward, bailiff, &c., &c.

These are the principal apartments on the ground-floor; we will therefore proceed up stairs. The staircase is an important part of an old English house. The steps are either of stone or of polished oak, and the balustrades and rails are of carved oak. The staircase is lighted by a large mullioned window, filled with stained glass. This staircase leads up to the bed-rooms of the principal members of the family. A house of some pretension will often have a "state" bed-chamber, devoted especially to the use of such visitors as may be of consequence. This "state" room is furnished in a somewhat costly style, and is accompanied by two dressing-rooms. The other bed-rooms have one dressing room each attached to them.

The servants' bed-rooms are on the highest floor, and are approached by a separate staircase from another part of the house. The stairs are in connexion below with the housekeeper's room, the kitchen, and all the various offices appropriated to the duties and employments of the servants. These we need not describe in detail, but as an example of a kitchen fit for a large house, we may quote the following from the work last alluded to:—"I remember to have seen a kitchen, at a house in Warwickshire, which struck me particularly. The kitchen, scullery, larder, &c., formed a range of building on one side of the kitchen court, separate from the house, but there was a covered way between them The building was of two stories, the kitchen occupying the centre. It was a large lofty room, of good proportions, as high as two stories of the building. You entered it at one end, by large folding doors, from a passage through the building: at the opposite end was the fire-place, with a screen before it, on one side of which was the door to the scullery and bakehouse, on the other side a range of set coppers of different sizes. On one side of the room were two rows of windows, and under the lower row a range of charcoal stoves and hot plates, the latter to keep things warm. The other side had only the upper row of windows, and against the wall was a dresser, above which the copper cooking utensils, &c., were ranged in a very ornamental way. A long table was in the centre of the room, and over the door a dial clock. The ceiling had a very handsome cornice, and a boss in the centre, from which hung a brass lamp. Opposite the entrance-door another door admitted you to a passage, on one side of which were the larders, on the other, salting-rooms, &c., and at the end a staircase led to the cook's apartments over." Such a kitchen is, however, of

rather a higher standard than would be required for an English country house.

The reader will understand that the above is not so much a description of a house actually existing as a means of conveying a general idea of most of our country villas.

If we visit our northern neighbours we shall not find a very striking distinction between their houses and those of the English. Indeed, so much are the habits and tastes of the wealthy classes in England, Scotland, and Ireland becoming assimilated by constant intercourse that their dwellings bear a very close resemblance to one another. We may, however, observe that one characteristic feature of the houses at Edinburgh is the enormous height to which they are built. No private houses are to be seen in London equal in height to many at Edinburgh, which extend sometimes to seven or eight stories, or "flats." These very lofty houses are, however, more prevalent in the trading parts of the city than in that part occupied by the genteel inhabitants. It is worthy of a passing remark that Scotland does not contain so many middle-class houses as England,—not so many manor-houses of moderately wealthy landowners, nor houses of retired tradesmen, nor substantial farm-buildings. This arises, not from any inferiority in the wealth or character of the people, but from the events of her history. It is not yet one hundred years since Scotland was a scene of rebellion and anarchy,—highlander despising lowlander, because the former had not yet learned to appreciate the advantages of social comfort, as enjoyed in the lowlands, and in England. But since that period an unprecedentedly rapid progress has been made in every part of Scotland, and her houses, as well as the spirit of her institutions, are becoming more and more like those of England. In Ireland, too, many circumstances have retarded the increase of a class of inhabitants between the very rich and the very poor.

3. Houses of France, Switzerland, and Germany.

We must cross the Channel, to visit the houses of our neighbours, the French. These are generally speaking larger than the houses of English persons of equal rank. But this is partly accounted for by the different way in which the house is parcelled out. In England a respectable family will occupy a house of moderate size to themselves. In France they would occupy a portion of a very large house. Each floor contains a suite of rooms, and a house often contains as many respectable families as there are floors. We are here speaking not so much of large mansions as of respectable private houses.

In Paris, the large mansions generally obtain the name of *hotels*, a term which we apply to the highest class of houses for public accommodation. Mr. Cooper, in his *Residence in France*, has given some details respecting these Parisian mansions. He says,—"The private hotels are even more numerous than the private gardens, land not always having been attainable. Of course these buildings vary in size and magnificence, according to the rank and fortune of those who caused them to be constructed; but the very smallest are usually of greater dimensions than our (American) largest town-houses; though we have a finish in many of the minor articles, such as the hinges, locks, and the wood-work in general, and, latterly, in marbles, that is somewhat uncommon, even in the best houses of France; when the question, however, is of magnificence, we can lay no claim to it, for want of arrangement, magnitude, and space." The hotels bear the names of their owners. The higher classes of the nobility were accustomed to build a smaller hotel near the principal structure, which was inhabited by the inferior branches of the family, and sometimes by favoured dependents,—this is called the *petit hôtel*. Our first apartments were in one of these petits hotels, which had once belonged to the family of Montmorenci. The great hotel, which joined it, was inhabited, and I believe owned, by an American, who had reversed the usual order of things by coming to Europe to seek his fortune. Our next abode was the Hôtel Journiliac, in a small garden of a remote part of the Faubourg St. Germain. This was a hotel of the smaller size, and our apartments were chiefly on the second floor, or in what is called the third story in America, where we had six rooms besides the offices. Our saloon, dining-room, &c., had formerly been the bed-chamber, dressing-rooom, and ante-chamber of Madame la Marquise, and gave one a very respectful opinion of the state of a woman of quality, of a secondary class, though I believe that this family, too, was highly allied. We are now in a small hotel in the Rue St. Dominique, where in some respects we are better lodged than ever, though compelled to occupy three floors. Here the saloon is nearly thirty feet in length, and seventeen high. It is panelled in wood, and above all the doors, of which, real and false, there are six, are allegories painted on canvas, and inclosed in wrought gilded frames. Four large mirrors are fixtures, and the windows are vast, and descend to the floor. The dining-room, which opens on a garden, is of the same size, but even loftier."

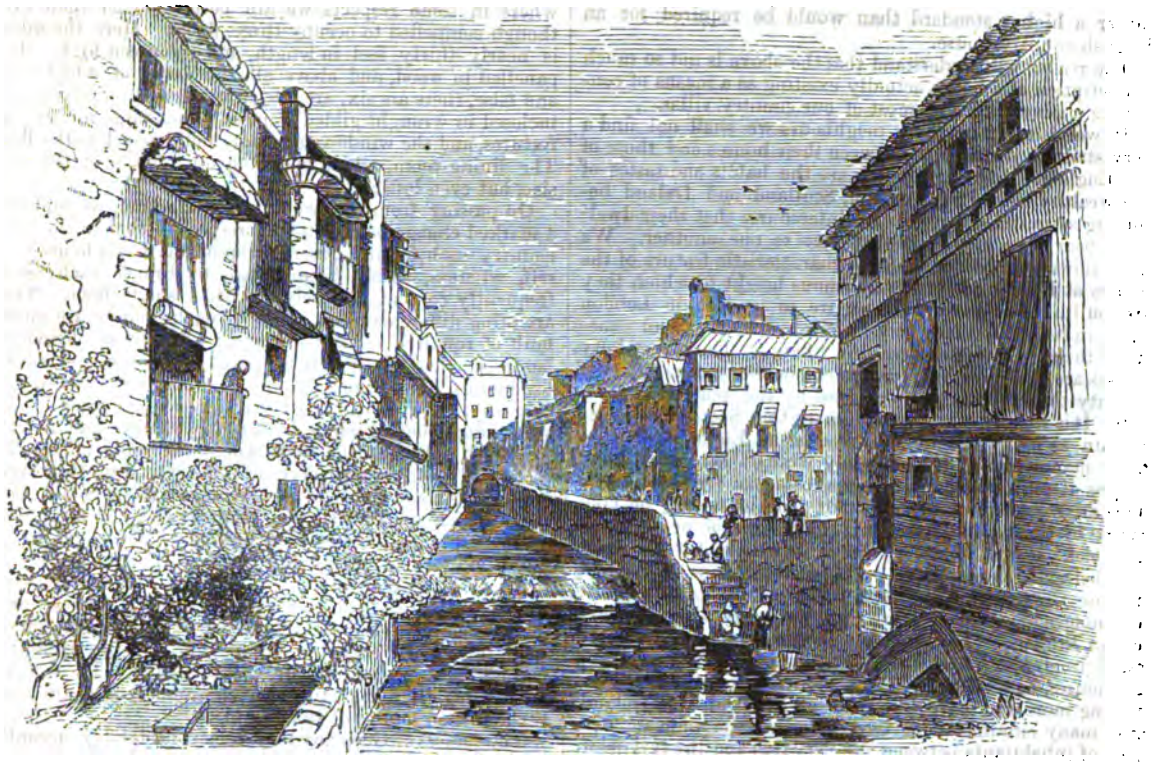
On passing from France into Switzerland, we find that a marked change occurs in this respect:—that in the latter country each family, generally speaking, has a house to it self, whereas, as has been stated, in France each family frequently content themselves with a single floor. There are other differences, too. The French houses are mostly built of rough stone, and stuccoed; while those of Switzerland,—particularly if near the great pine forests,—are often log-houses, built almost wholly of wood, but finished very carefully, and constructed with great accuracy. The walls are formed of whole trees neatly squared and notched into each other at the ends where the walls cross. The roof is of wood; short pieces of pine split into thin layers are used as tiles, and held together by small spars laid across them, which are, in their turn, kept down by stones. Many of the cottages have wooden chimneys, the whole of the flue being formed of and lined with wood: the smoke and turpentine together produce a varnish, which preserves it from taking fire. The beams supporting the roof are ornamented at the ends; and the principal front is also carved, sometimes with elaborate ornaments, and inscriptions in German text are painted in several colours. These houses have altogether a picturesque appearance, and are much warmer than houses of stone or brick.

The houses of Germany may vary considerably according to the locality,—some bordering on the cold climate of the north of Europe, while others adjoin Switzerland and Italy. In some parts, such as North Prussia, the houses are framed of wood with bricks between; and the upper stories project over the lower, and are supported on columns generally of wood. In other parts the houses are of frame-work of wood, the interstices filled with unbaked bricks, and then plastered with clay. While in other parts, again, the arrangement of the houses nearly resembles that of the English. We may here briefly notice the character of the buildings in two or three of the principal cities of Germany.

The general nature of the better class of houses in Vienna is massive and imposing, rather than ornamental. The streets are generally narrow; and the houses lofty,—rising to four or five floors, which are all entered by a common stair. Some individual masses of building, in the heart of the city, are as populous as large villages. One dwelling-house containing ten large courts,—is peopled by more than twelve hundred inhabitants, and yields a yearly rental of 6500*l*. Another building contains no less than one hundred and fifty separate dwelling-houses. Even the ordinary buildings are generally in the form of a square, surrounding a small court; but the houses are so high, and the court is of such small dimensions, that it frequently has more the appearance of a well; and the staircase, which receives its light from it, is almost in darkness. Every house, whatever number of families it may contain in its several floors, is under the superintendence of a *hans-meister*, or house-master, who is a personage of much importance to the convenience of all who inhabit it. He is generally some humble person employed by the proprietor to take care of the house, and to lock up the outer door at a certain hour in the evening, after which neither ingress nor egress can be obtained without giving him a fee.

The arrangement of the large houses in Berlin is very different from those of Vienna. There is an imposing palace-like effect produced, on account of the general employment of an Ionic portico in front of most of the principal buildings. Sometimes three out of the four sides of a building are decorated with porticoes.

Dresden, the capital of Saxony, differs from both the forenamed cities. The general style of building is simple, austere, and imposing. The wealthy inhabitants, in building their residences, thought chiefly of convenience and duration, not of pillared portals and airy verandahs. The houses are lofty and the streets narrow; but some of the principal streets are of ample breadth, and lined with stately, though unadorned buildings. Within the last few years, however, a tendency has shown itself to introduce more architectural regularity than was formerly displayed in the houses of Dresden.



GRENADA.

Mr. Cooper visited one of the baronial residences on the banks of the Rhine, at present occupied by a brother of the King of Prussia. A few words may be said respecting it here. The entrance is by a drawbridge. The court is narrow and inconvenient; but there are several little terraces which command views of the scenery of the Rhine. The Ritter Saal, or Knight's Hall, though not large, is a curious room. The fire-place is of an enormous size; and round the walls hang numerous pieces by ancient armour. The chandelier is a circle formed of uniting bucks' horns, from which lamps are suspended. In one corner of the hall is an ancient vessel to hold water, and beneath it a porcelain trough. The chairs, tables, setteer, &c., are all of oak, and covered with armorial bearings. The stairs have a quaint and remarkable appearance, and in one instance they encircle the exterior of a tower, at a giddy elevation of nearly three hundred feet above the river, the tower itself being placed on the outermost verge of the precipice.

In Holland and Belgium, the houses do not possess a distinctive character. They are partly French, partly German, and partly English. But we may state generally, that they are very deficient in anything like architectural beauty.

4. Houses of Northern Europe.

In the colder climates, such as Denmark, Russia, Sweden, and Norway, we find precautions taken against the chilling blasts of winter, which are not called for in the southern countries of Europe. Denmark, Sweden, and Norway, particularly the latter two countries, are not so well provided with middle-class houses as most of the other European states. The peasants' houses are generally log-houses, but with a more highly pitched roof than those of Switzerland; and they are often covered with boards projecting six feet beyond the walls. A general custom in the middle-class houses in Russia is to cover the roof with sheet-iron, and paint them with vivid colours, mostly green and red. Another feature, (to which we shall presently further allude,) is that of having double windows to the principal rooms. In the villages, each house presents a bold projecting gable towards the street: the houses are of two or three stories with a balcony on the gable front.

Dr. Granville, during a residence of several months at St. Petersburgh, had an opportunity of seeing the habitations of the wealthy classes in that capital, removed on the one hand, from the costly splendour of the Emperor's palaces, and, on the other, from the more humble dwellings of the trading community.

The entrance to the St. Petersburgh mansions is generally by a private door adjoining the carriage gate. Within is a spacious yard or court, in which enormous heaps of fire-wood are piled on one side, and around which are the four sides of the mansion. Under the great carriage gateway is generally a double glazed folding door, for receiving visitors on grand occasions, leading to the foot of the grand staircase; but the general daily entrance is by the private door: this door is glazed as well as the other, so that a liveried porter withinside sees visitors approaching and opens the door to them without any application to a bell or a knocker. The owner of the mansion generally occupies the ground floor, near the street door, with his study, receiving room, waiting room, private cabinet, &c. The stairs of the staircase leading to the upper stories are generally of coarsely-grained, unpolished granite: they are only occasionally scoured, and have seldom a strip of carpet laid on them. The staircase is square, with high walls, lighted by three or four windows, and decorated with statues, busts, and pictures; but they have seldom the light iron balustrade which gives such an elegance to the staircase of an English mansion.

At the top of the staircase we meet with an ante-room, generally occupied by lacqueys; from whence we enter a long suite of drawing rooms, which are fitted up with great magnificence, having costly furniture round the walls, but, like the Parisian mansions, having none in the centre of the room. The floor is inlaid with two or three differently coloured woods, which are kept highly polished. After the drawing rooms come the ladies' apartments, as they are termed, often twelve or fifteen in number, and including three or four state rooms. The fancy woods for the furniture are of a great variety of kinds, and are highly polished. There are rich silk draperies, and the walls are either painted in fresco or hung with silk. The ceiling is generally painted in distemper with an allegorical or other design. Chandeliers pendant from the ceiling are not much used; but almost every room has a magnificent looking-glass, the manufacture of which is conducted with much skill in Russia.

One of the most remarkable characteristics of these Russian mansions, is the swarm (for it is nothing less) of servants. The master and mistress, as well as the guests, go to the ante-room at the top of the staircase, to throw off their outer garments, such as cloaks, furs, flannel boots, &c., and numerous servants are there ready to receive them. At dinner, one servant stands behind the chair of every guest. But these instances are comparatively commendable: it is

stated by all travellers, that a large number of the servants have absolutely nothing to do. It is only partially that the use of *bells* has been adopted in the Russian mansions, and where they are not used, a servant stands in each room to receive orders, and one or two boys stand at every door of the suite of rooms, and thus convey orders from one to another. But the possession of more servants than are wanted, is only a part of the evil; for it is customary for each servant to have his wife and family in the house, and not unfrequently his relations and friends. A Russian officer told Dr. Granville, that when he married, he had determined to reduce the number of his household, to something like a moderate limit, and he retained forty: in three or four years afterwards, he found that he was supporting double that number, the wives and children included. It was stated that the Countess Orloff had at Moscow so many servants that she established a hospital for them when ill: their number was eight hundred. Yet it seems, that there is not one female servant whose duties are equivalent to those of an English housemaid;—bed-making, dusting, sweeping, &c., are all performed by men. The existence of this peculiarity in the domestic arrangements of the Russians depends on the state of society in general in that country, and is influenced by causes too intricate to be explained here.

We may here consistently allude to the precautions which the Russians take to adapt their dwellings to the nature of the climate. The winters are very severe, and the difference of the arrangements for summer and winter is greater than that which exists in England. When the winter season is approaching, the better sort of houses are provided with double windows, an extra entrance door, and a peculiar kind of close stove. The mode of doubling the windows is this:—A dry day is selected, when every part of the window is as free from damp as possible, an additional window is fixed within the common one, and a layer of sand is laid at the bottom between them. The object of this sand is to absorb the moisture which may be contained in the air between the two windows, else it might be deposited on the windows and dim the glass. Both windows are caulked round the edges with tow, and one square of glass in each window is made to open by means of a hinge, so as to admit fresh air when required. The extra door which is put up at the entrance of the principal apartments is thickly wadded with a kind of hair-cloth, so as to shut in a completely air-tight manner.

Dr. Granville considers a Russian stove, or *petch*, to be "one of the greatest luxuries of civilized life that can be found in cold climates. It is by far a more rational and effectual mode of warming a house, than either the coal-grate of England, the blazing hearth of France, or the iron-stove of Germany. It supplies the best substitute for the genial warmth of summer within doors, and affords an equable degree of heat so universally spread in every part of the room that when the external air has been at 20° Fahr., I have gladly remained without any other than the lightest dressing gown, in my room, taking my station indifferently in any part of it, far from the stove, and frequently near a window, without any other than the most pleasing sensation of an equal warmth."—So very equable, indeed, is the warmth of the apartments shut in by double windows and warmed by a stove, that the inhabitants frequently sleep with only a single sheet on them.

The petch forms a principal article of furniture in each room. Frequently the stove is placed in the centre of the wall separating the two rooms, so as to warm both. The stoves are built of stone or brick, and cased with white porcelain: they are of great size, and extend to the ceiling. The internal arrangement is this:—There is a fire chamber occupying the lower part, and extends from front to back, being about a foot and a half wide, and two feet high; in this the wood is burned; and it is closed by an iron door. A tube within carries off the smoke and soot of the burning wood, and other tubes convey the heated air round every part of the surface of the petch, so as greatly to heat the brick and porcelain. The mode of "keeping the fire in," is totally different from ours. Twelve or fourteen large billets of elm, two feet long and three inches thick, are put into the fire-chamber and kindled. The iron door being left open, a most intense combustion of the billets takes place, during which the pipe, serving as a chimney, is left open. When all the wood is burned away, the chimney is closed, the iron door is closed, and the highly heated air is completely shut in. So excellent are these arrangements, that the heated porcelain, brick, air, &c., of the stove, will impart an agreeable warmth to the apartment for forty-eight hours after the fire is completely extinguished. There is a small door communicating from the air of the room to the heated air in the stove; this door is kept open or shut, according to the temperature required.

Such is the general nature of the Russian stove,—an arrangement so remarkably different from the open fireplace of an English house, that we could scarcely conceive the effects of it, were it not that within the last few years many improvements have taken place in the modes of warming English dwellings, chiefly through the philanthropic exertions of Dr. Arnott.

If we proceed onwards to Moscow, we find the character of the dwellings much changed. Although still in European Russia, Moscow presents many of the features peculiar to Asia. It is situated more completely inland than almost any large city in the world, and is so far removed from the countries of western Europe, that it partakes of but few of their characteristics. Its palaces are of immense size and grandeur, as this city is the principal residence of the great Russian nobles. The houses of the mercantile classes present a singular mixture of Asiatic and European construction, for Moscow is the mart through which the treasures of the East are diffused over Russia generally. The Chinese, the Turk, the Greek, the Tartar, the Calmuck, the Persian,—all visit and inhabit Moscow, for commercial purposes.

A few more words, and we must then quit the countries of Northern Europe. Mr. Laing gives a graphic picture of the domestic arrangements and modes of employment, in the houses of the respectable inhabitants of Norway. The family room, or hall, is sprinkled with fresh bright green leaves, which have a lively effect: everything is clean and shining: an eight-day clock stands in one corner, and a cupboard in another; benches and straight-backed wooden chairs are arranged round the room; and all the family occupations are going on, and exhibit curious and interesting contrasts of ancient manners with modern refinements. The process of carding wool and flax is conducted in one corner: two or three spinning wheels are at work near the stove; and a young lady will get up from these old-fashioned occupations, take her guitar in the window seat, and play and sing, or gallopade the length of the room with her sister. The breakfast is laid out on a tray at one end of this apartment, which is usually spacious, occupying the breadth of the house, and lighted from both sides. This meal is taken, standing: it consists of slices of bread and butter, smoked meat, sausages, dried fish, with the family tankard, generally of massive silver, full of ale, and with decanters of French and Norwegian brandy,—the latter being drunk only by the gentlemen. While the gentlemen are walking about, conversing and taking breakfast, the mistress is going in and out on her family affairs, servants enter for orders, neighbours drop in to hear or tell news, the children are learning their catechism, or playing about; and the whole is such a lively animated scene, everything is so clean and orderly, and the manners of the people towards each other in familiar intercourse are so amiable, that the traveller who wishes to be acquainted with the domestic life of the Norwegians, will pass an hour very agreeably in the family room. Coffee, if drunk in the morning, is generally taken an hour before the family breakfast, and in the bed room.

5. Italian and Spanish Houses.

In leaving the climes of Russia and Norway for that of "Sunny Italy," we may naturally expect that the dwellings of the inhabitants, as well as the national character, present many marked features, arising partly from the early civilization and refinement of that people. The houses of the wealthy classes in Italy vary greatly with the position and nature of the towns. Under the general term, "Italy" we include the cities of Venice, Genoa, Milan, Florence, Rome, Naples, &c., although those cities belong to separate states, and are situated under different circumstances. We will therefore take a rapid glance at some of them in succession.

The mansions of the nobility at *Venice*, Forsyth tells us, are as various in their architecture as in their architects. Some display the light elegance of Sansovino; others the exuberant ornament of Loughina; and a few, the correct beauty of Palladio. They in general affect too many orders in front: each order has, absurdly enough, its full entablature; the lower cornices are as prominent as the upper, and

appear in profile so many separate roofs. In fact, the Grecian orders, being foreign to the manners and wants of a city built on the edge of the water, will never enter into its accommodation but at the expense of half their beauty and all their consistency. Most of the mansions have two gates, some three, in the middle of their fronts. On each side are two ranges of equal windows in the basement alone. Over the gates is a stately and decorated superstructure of balconies, arcades, and gigantic windows, contrived for Venetian pageantry, and set in studied opposition to the general style of the front, which this wide vertical breach divides into two. The windows are generally arched: in some mansions this arch is circular: in others it forms arabesque curves of contrary flexion, which finely contrast with the flat mass of wall. In some, even the Gothic church-window has been adopted. A great disfigurement to these mansions are the chimneys which are made prominent objects on the top. In former times the outsides of the Venetian houses were painted: even such men as Paul Veronese and Tintoretto were employed in that mode of decorating the houses: but in later times this custom has disappeared. The ceilings of the apartments are always decorated. But since the downfall of the Venetian republic, many circumstances have tended to reduce the splendour of the city. The large mansions, palaces, indeed as they may be termed, have many of them been deserted, sold, and dismantled, during the present century.

Let us now cross the north of Italy to *Turin*. This city is the capital of Piedmont, and is more regularly built than the generality of Italian cities; it has rather a modern appearance, and is very clean, an advantage gained by the flowing of much clean water through the streets. No mean suburbs, and no mouldering walls, deform its entrance. It contains spacious and regular streets, which intersect each other at right angles, and which lead to a grand square or *piazza* in the middle. Through the principal streets, each side exhibits a long and regular line of porticoes, presenting many beautiful specimens of architecture; while the balconies above them, canopied with light draperies, have a very pleasing appearance. The houses and hotels generally are said to present a very elegant appearance. It has been stated, however, as a strange instance of carelessness, that in many façades of very handsome architecture, the holes are still left gaping, which supported the scaffolding at the time of their erection.

Proceeding to the southward, we come to the famed city of *Florence*, the mansions of whose wealthy inhabitants are distinguished for much splendour. It has been observed by Mr. Bell, that in the best streets "each house is a palace; and a palace in Florence, is a magnificent pile, of a square bulky form, with a plain front, extending from two to three hundred feet, built of huge dark-grey stones, each measuring three or four feet." The general structure of these mansions is this coarse rubble work rising to a height of twenty or thirty feet from the ground. A stone seat runs the whole length of the front, which used, in former times, to be occupied by the dependants of the family, who frequently slept there, sheltered from the sun by an overhanging cornice. Large iron rings are sometimes seen fixed into the wall: these were formerly used to contain the banners of the owner,—to hold flaming torches,—and to fasten horses to. The lower range of windows are grated and barred with massive iron frames, which present much of the melancholy effect produced by prison windows. On the second story is a plain and simple architrave: the windows are high and arched, placed at a considerable distance apart, and from ten to fifteen in number, according to the width of the building. The third story resembles the second in its plainness, and in the number of its windows. The roof is flat, with deep cornice, and bold projecting soffits, which give a grand and magnificent effect to the whole edifice. The chimneys are grouped into stacks, the tops of which, increasing in bulk as they rise in height, resemble a crown. The slates with which the chimneys are built are ranged so as to act as ventilators. Two or three steps lead up to the porch of the mansion, the doors of which are studded with iron, both for the sake of strength and of ornament, and the entrance is an arched massive iron gate. The gates open into a court, the base of which is surrounded by a high arched colonnade, supported by marble columns. Entering from the court, a great staircase leads to a suite of noble chambers, halls, and saloons, hung with silks, and richly adorned. The ceilings are lofty and finely painted; the beams being displayed, and carved, ornamented and gilt. The arcades of the court support the galleries, which, in former times, were generally filled with fine paintings, statues, and vases.

"In such palaces," says Mr. Bell, "the rulers, the magistrate, the noble, and the merchant dined, surrounded by their family and dependents. The manner of the times bore a character of manly simplicity, which, singularly contrasted with the splendour of the rich possessions, and the importance of their political sway among nations. Their guests were seated, not by rule, rank, or birth, but in the order in which they happened to arrive. At the board of Lorenzo the Magnificent, whose court was adorned by the most distinguished men of the age, as well in letters and science as in rank, Michel Angelo and other celebrated artists were often seated next to himself. Nor did these habits lessen the respect or deference of the dependents, as we may judge by the picture given by Cellini and other writers of those days. From this combination of princely power and pristine simplicity, inducing that familiar intercourse of lord and dependents, rich and poor, arose those friendly greetings, those salutations in the streets, which to this day excite the admiration of strangers."

Proceeding southward from Florence, the two great cities which present themselves on the western edge of Italy are Rome and Naples,—two cities which have scarcely one feature in common,—which differ indeed as much as if they belonged to countries altogether different. At Rome there is a sober grandeur pervading everything. The visitor is in the heart of the Roman world, surrounded by innumerable evidences of past ages. There may be, and are, bigotry and superstition at Rome, but there is very little frivolity. The character of the inhabitants, and the nature of their houses, have a kind of gravity about them that does not fail to strike a stranger. In Naples it is altogether different: the fronts of their houses, like their hearts, are all window: all is light, joyous, frivolous, and—vicious. The Neapolitans, unlike other people, do not attempt to conceal their vices: they make fun of everything; they manage to extract a laugh from subjects which to others would seem to demand serious attention. The fine arts are at a lower ebb in Naples than at any other city in Italy, so that what refining influence there may be in such arts is lost to the Neapolitans. In Naples, says Mr. Forsyth, "even the lowest class enjoy every blessing that can make the *animal* happy,—a delicious climate, high spirits, a facility of satisfying every appetite, a conscience which gives no pain, a convenient ignorance of their duty, and a church which ensures heaven to every ruffian that pretends to faith. Here tatters are not misery, for the climate requires little covering; filth is not misery to them who are born to it; and a few fingerings of macaroni can wind up the rattling machine for the day." The inhabitants of Florence stand midway between those of Rome and of Naples, and perhaps avoid many of the vices of both. And in that particular feature in which we have at present to do with them,—their dwelling,—the same will apply. Give a little more sombreness to the mansions of Florence, and you have those of Rome: give them more frivolity, and you have those of Naples.

The houses of Spain present that mixed character which is likely to result from the successive conquest of a country by different nations. Spain is one of the countries in Europe (the other being Turkey) which have been under the Mohammedan yoke, and this circumstance has not failed to impart to the dwellings of some parts of Spain that peculiarity which is seen in most Mohammedan dwellings;—we mean, a large central court surrounded by buildings on every side. As we shall shortly describe these courts somewhat minutely, we will not dwell on them here. Those parts of Spain which were able to resist the Moorish invaders, have retained most of the features which distinguish Italian and French houses of the middle class,—with the addition of a gloomy appendage called a *jalousy*, the nature of which we shall hereafter describe.

The houses of Seville are thus described by Standish:—"The houses of this town are perhaps the most picturesque in the world. You enter them from a porch, or zaguan, to a court, round which are marble columns, and these are found not only in the principal, but even ordinary habitations. The arches between the columns support galleries or rooms above. It is usual to inhabit the ground-floor in summer time and the upper story in winter. In the former season a canvass veil is placed over the whole court during the heat of the day, and removed at night, when the family collect together, to receive friends under the galleries, or in the courts, whilst flowers are placed round a fountain, which generally plays in the centre, the courts being often paved

with marble. The lamps which hang around the walls in symmetrical arrangement, the bubbling of the water, the fragrance of the flowers, the mystical green branches which spring up in every direction from large earthen pots, give an appearance of romance, which, added to the broken lights, the irregular architecture of the buildings, and the white Ionic columns of marble, present, in every house, a varying subject for the draftsman or the painter. To the sides of the walls are attached mirrors, which reflect all around, and pictures, amongst which were once works of art that would delight the connoisseur. It has been calculated that eighty thousand marble columns exist in Seville, but there assuredly must be a much larger number, for many are buried in the walls, others covered with plaster, and on an average every house possesses six."

From Spain we proceed to that country of Europe which approaches nearest to an Asiatic character, we mean Turkey. By speaking of the capital, Constantinople, we shall form a sufficient idea of other parts.

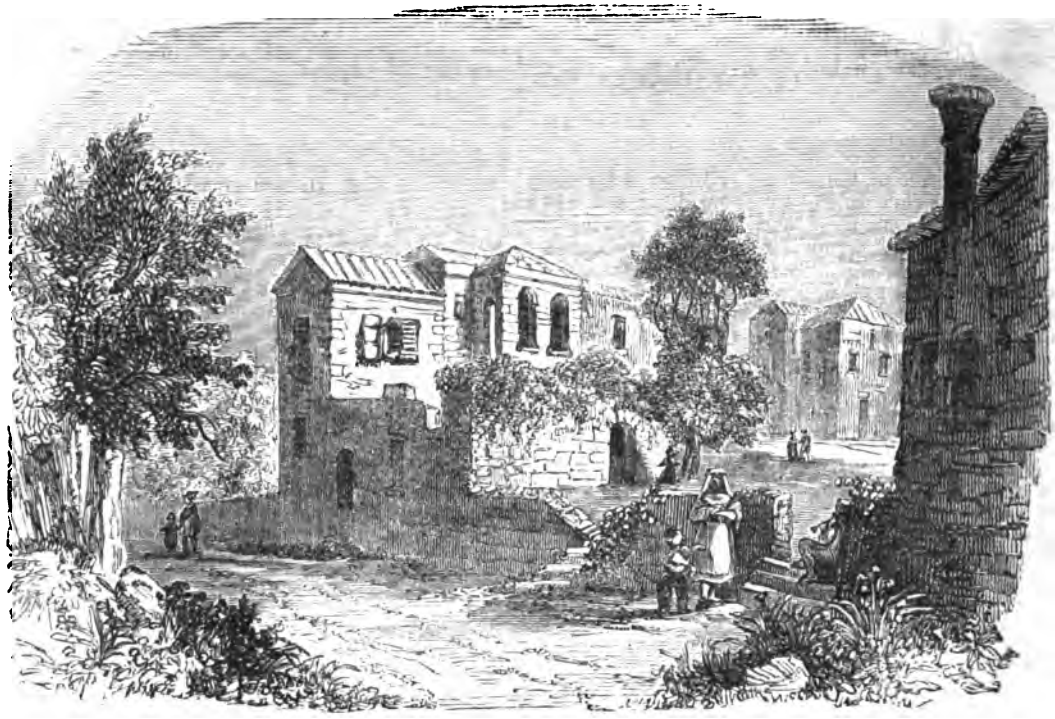
6. Houses of Constantinople.

Constantinople, like most Mohammedan cities, is more distinguished for its mosques than for its private dwellings. The general character of its streets is narrowness and meanness; but the nature of the houses depends on the locality. The houses in the suburbs called Galata and Pera, in which most foreigners who visit the city take up their residence, are inhabited by the foreign ambassadors and other distinguished strangers, and are of course built in a style somewhat worthy of their reception. But the generality of the houses are said by Wheler to be low, and to be built of wood, so that fire frequently makes much devastation among them, espeecially from a custom which the Turks have of smoking in bed; and it is also said that these fires are not unfrequently the work of incendiaries, who are actuated by the hope of pilfering. The destruction of the houses themselves is no great matter, for the rebuilding costs but little, and the supply of timber is very abundant; but the burning of merchandize which often accompanies that of the house, is a distressing disaster to numerous families. When a fire commences, the Turks are frequently obliged either to pull down or to blow up several houses, in order to break the communication from one part of the town to another: otherwise the whole would be destroyed.

A curious class of houses in Constantinople are the *hans*, of which there are about two hundred. These hans are a kind of large lodging house. They are immense stone buildings, inclosing a central square. The court is often ornamented with a grove of trees and fountains. The building, besides warehouses and stables on the ground floor, has three stories or galleries, one above the other, with ranges of small chambers, each of which is kept neat and clean by the servants of the *han*, and fitted up for the time with the carpets and slender wardrobe of the several occupiers. These *hans* are usually for travelling merchants; but are sometimes occupied as counting-houses by Turks who reside at Galata, Pera, or other suburbs of the city. What would appear remarkable to an Englishman accustomed to the commercial arrangements of hiring dwellings, &c., is that these *hans* are open to all strangers free, with the exception of a small fee to the servants. They are for men of all countries, and of every religion,—the poor and the rich,—and they have had the good effect of drawing merchants and merchandize to Constantinople. They belong to the Sultan, and the expense is defrayed by him. The private dwellings in Constantinople are not of such a description as to merit much notice here. They are chiefly distinguished for their flat roofs, by which they are known at a distance from the mosques, chapels, hans, bazaars, and baths, almost all of which have domes or cupolas. Adrianople, another city of the Empire, is the principal place of intercourse with merchants from Northern Europe, and the dwellings present that mixed character which almost inevitably results from such intercourse.

We have now conducted the reader to warm climates, among whose natives the industrious habits of Europeans are but little exercised; where the light of Christianity has as yet but dimly shone; where woman is known only to be degraded; and where polygamy has severed the lovely ties which join man, wife, and children in domestic union. These features of national character are observable in a fearful degree throughout the whole extent of Northern Africa, from Morocco to the Isthmus of Suez;—throughout Asia Minor, Syria, Arabia, Persia, Georgia, Circassia,—and indeed, we may almost say, throughout the whole of Asia southward of the cold regions of Siberia. In nearly all these countries, the houses of the inhabitants of higher and middle rank have this peculiarity which distinguishes them from the houses of Europe, that the apartments for the females,—called collectively the harem, or haareem,—are situated in a distinct part of the house, and are usually secluded with a jealousy which makes their inmates completely prisoners.

In another Supplement we will, endeavour to convey a general notion of the dwellings in these countries.



PETRARCH'S HOUSE AT ARQUA.

LONDON. Published by JOHN W. PARKER, West Strand, and sold by all Booksellers.

THE

Saturday Magazine.

Nº 600. NOVEMBER 6TH, 1841 { PRICE ONE PENNY.

THE MILK-GIRL. FROM A PICTURE BY GAINSBOROUGH.

GAINSBOROUGH AND HIS WORKS.

I.

THOMAS GAINSBOROUGH, who so greatly excelled among artists in the department of landscape-painting, was born in the year 1727, at Sudbury, in Suffolk. His personal history is, however, very defective, though his works are full of the truest nature, and the purest fancy.

Like the best of the poets, he was born a painter. He has said of himself, that during his boyhood, though he had no idea of becoming a painter, yet there was not a picturesque clump of trees, a single beautiful tree, hedge-row, stone, or post, for some miles round about the place of his nativity, that he could not well and perfectly delineate with his pencil.

Thus, the love of his art led him constantly among the ancient trees, the winding glades, and the sunny nooks. Scenes are still pointed out where he used to sit and fill his copy-books with pencillings of flowers and trees, and whatever struck his fancy; and it is said that those early attempts of the child bore a distinct resemblance to the mature works of the man. At ten years old he had made some progress in sketching, and at twelve he was a confirmed painter.

We are here tempted to narrate a story of one of his early works. On one occasion he was concealed among some bushes in his father's garden, making a sketch of an old fantastic tree, when he observed a man looking very wistfully over the wall at some pears, which were hanging ripe and tempting. The slanting light of the sun happened to throw the eager face into a highly picturesque mixture of light and shade: the young artist immediately drew a likeness of him, much to the poor man's consternation afterwards, and much to the amusement of his father, when the man was charged with the design of robbing the garden, and shown how he looked at the time. Gainsborough long afterwards made a finished painting of this Sudbury rustic,—a work much admired among artists under the name of Tom Peartree's portrait.

Though his early sketches made in the woods of Sudbury were numerous, few of them are now known to exist. As his reputation increased, he became less satisfied with such early proofs of talent, and gave them liberally away among friends and visitors. To one lady, we are told, he gave twenty of them: she pasted them on the walls of her apartment, and, on her leaving London, they became the property of the next inhabitant.

His talents being now universally acknowledged, his father was persuaded to send him to town. It appears that he was not more than fourteen years of age when he left Sudbury for the metropolis, and that he studied under Hayman, one of the companions of Hogarth. In the course of time he seemed to feel that no landscapes worthy of the art had yet made their appearance, and that his own works were essentially different from those on which the other artists were engaged. This consideration probably induced him to devote himself rather to landscapes. He remained in London four years, and acquired skill and experience in the management of colours.

Being now in his eighteenth year, he is spoken of as having acquired reputation by his talents, as evincing a modest gaiety in his conversation, and extreme elegance of person. It happened, in one of his pictorial excursions among the woods of Suffolk, that he sat down to make a sketch of some fine trees, with sheep reposing below, and wood-doves roosting above, when a young woman entered unexpectedly, but very *à-propos*, upon the scene, and was at once admitted into the landscape and the feelings of the artist. This young lady was Margaret Burr, of Scottish extraction, and then about sixteen years old, who not long afterwards became his wife.

Soon after this event Gainsborough removed to Ipswich, where he became acquainted with Thicknesse, the governor of Landguard Fort, in the following curious manner. The governor was walking in the garden of a friend, when he perceived a melancholy-faced countryman, with his arms locked together, leaning over the garden wall. He pointed out the man to his friend, who, with assumed gravity, observed that the fellow had been there all day, that he was to be pitied, as being either mad or miserable. The governor then stepped forward, with an intention to speak to the madman, and did not perceive till he had got close up, that it was only a *wooden* man, painted upon a shaped board.

The governor was informed that many had been equally deceived, and was subsequently introduced to the painter of it. Gainsborough received him in his painting room, where, he says, he found many so-so portraits, but some charming landscapes. George the Second, visiting Harwich shortly after, our artist was employed by Thicknesse to paint a view of a yacht regatta scene. The picture was engraved, and contributed to make the name of the artist known. Soon after this he went to Bath, where he chiefly occupied himself with portrait-painting, for the sake of a ready means of livelihood. He got a considerable quantity of employment. His portraits were executed at first for five, and then for eight guineas each,—afterwards forty for a half-length, and a hundred for a full-length. He was occasionally very fond of fun. Once a rich citizen sat to him for his portrait, "with a new five guinea powdered bob-wig on." Gainsborough found something so comical in the look of the citizen, that he burst out into a roar of laughter, of course gave offence, and lost his commission.

Before his arrival at Bath he had been employed by the governor to paint Landguard Fort, including the neighbouring hills, and the port of Harwich. An engraving of this picture spread abroad the name and fame of Gainsborough. Of the original painting of the fort nothing now remains: it was hung on a wall built with mortar mixed with sea-water, and so perished.

Gainsborough and the governor were both of them fond of music, as well as of painting, so that, during the years of their early acquaintance, they seem to have been mutually pleased with each other's company,—the patron being kind and the painter obliging; but, when the fame of the latter began to draw the attention and favour of the public, he scrupled less to let loose his natural disposition, which was of an independent and impetuous cast. The consequence of this spirit was, that the governor soon took offence, and the painter was less and less anxious to soften down the causes of offence. Governor Thicknesse has been accused of misrepresenting and vilifying our artist in his memoirs of his early friend, but in the following paragraph, at least, we look in vain for the spirit of detraction:—

> Nature sat to Mr. Gainsborough in all her attractive attitudes of beauty, and his pencil traced with peculiar and matchless felicity her finest and most delicate lineaments, whether it was the sturdy oak, the twisted eglantine, the mower whetting his scythe, the whistling ploughboy, or the shepherd under the hawthorn in the dale,—all came forth equally chaste from his inimitable and fanciful pencil.

WHEN the common topic of the weather is introduced in conversation, or presented to the mind, the agriculturist will naturally refer to its influence on vegetation; the physician to its effects on the health of the community; the man of pleasure may think only of its reference to the sports of the field; the philosopher may endeavour to seek for its cause in some preceding atmospheric phenomena; and another person of certain habits of observation may compare or contrast it with the weather of the same period in a preceding year. Thus, in five individuals the same topic may give rise to five trains of thought, perfectly distinct from each other, yet each depending upon a very natural and obvious principle of suggestion.

BRUNELLESCHI, AND THE CATHEDRAL OF S. MARIA DEL FIORE, AT FLORENCE.

II.

In 1420, the most celebrated architects of Europe again assembled at Florence. Brunelleschi was included in the number, and he flattered himself with the idea, that this grand convocation would supply him not so much with competitors, as with worthy witnesses of his triumph.

Whoever will reflect (says Quatremère de Quincy) on the existing state of the building art, reduced by all Europe to the conceptions and processes of the Gothic, to the entire exclusion of the architecture of ancient Greece and Rome; whoever will think of the novelty of a vault of such lofty dimensions, and of such a diameter, that it has never since been surpassed, need not be astonished at the weakness, or the absurdity of the projects which were presented to this numerous assembly; it seemed like a struggle for superiority in ignorance and marvellousness. Some proposed to raise up pillars, whence should branch off arcs as supports to the timber work destined to bear the weight of the cupola; others advised a great pillar in the middle as a central support; some recommended them to build up a mountain of earth by way of scaffold: they were to mix a large number of pieces of money in this earth, and when the work was finished, they might trust to the cupidity of the multitude to carry off this natural scaffold.

Brunelleschi had not foreseen that true knowledge, if put upon its trial before ignorant judges, must be condemned: since, if it gained the cause, the judges would condemn themselves. When he presented his project, they railed at it as absurd: they did not understand him when he proposed to erect two cupolas, the one within the other, so as to leave a large empty space between them; but they laughed outright and called him *madman*, when he declared that he would employ no interior support,—no timber-work, to centre these immense vaults.

Brunelleschi believed for a moment that the fruit of so many years of toil was all lost. This assembly had only muliplied the doubts, and augmented the irresolution of the judges. Brunelleschi saw that nothing was to be gained by stormy debate: his strength lay in his own and true genius; and he declined further to risk the exposure of the one and the ridicule of the other, before the prejudices of blind and partial judges. He therefore began to attack separately those members of this assembly, which as a united body he could not move. He encouraged some; persuaded others; and half revealed to all the secret of a very simple method, which no one suspected on account of its simplicity. At the next meeting he experienced no more taunts and contradictions.

The elements of Brunelleschi's scheme were quite unknown to his competitors. Accustomed to the lightness of form, and construction of the Gothic, they only knew how to raise to a great height, by means of buttresses, walls hollowed out in a variety of ways; and groined vaults formed of small courses of masonry, where the whole thrust was divided and received by many points of support. But it was above all things necessary, in the erection of the projected cupola, to establish a new system of construction, to employ more powerful materials, more massive and simple points of support; so to act, that the construction, in this vast circumference, should of itself act as scaffold and point of support. Brunelleschi's model would have proved how all this could be done; but he was content to silence his opponents by argument alone: he did silence them, and obtained the suffrages of his judges; but his employers, in the absence of his model, would not allow him to proceed with the work to a greater height than twelve fathoms.

When truth is once established it is firm and immoveable: truth cannot be in opposition to itself, but envy and detraction often exert their nefarious powers to obscure it. It was whispered about that the glory of Florence was sullied by intrusting so magnificent a work to one single architect. A colleague was, therefore associated with him: this was Lorenzo Ghiberti, of whom Brunelleschi had formerly been the rival, was still the enemy, and had refused to become the associate. This man accepted the inglorious participation in a work to which he had contributed nothing, and from which his incapacity alone would have been sufficient to exclude him.

Brunelleschi became furious: the first impulse of his indignation prompted him to abandon the work and his native city for ever; his friends, however, managed to pacify him, and when he had cooled down, his course of action again showed his sagacity. He feigned illness, and thus left Ghiberti sole master of the works, in which situation Brunelleschi well knew that his incapacity for the task would quickly be displayed. Nor was he deceived. The frequent embarrassment and indecision of Ghiberti soon betrayed his ignorance, and some great and palpable errors into which he fell, opened all eyes to the perception of it. After great turmoil and difficulty, therefore, Brunelleschi was nominated sole architect and director in chief of the whole edifice.

From this moment he devoted his whole energy to the work. The smallest details did not escape his vigilant foresight. He directed each workman, but kept in his own hands the choice and destination of materials for his work. Not a stone, not a brick, was placed, without having been first examined by him. Each day he invented new machines, in order to simplify the work of building, or to abridge its operations. He saw, that in proportion as the building rose in height, the workmen lost their time, and expended their strength in fatiguing journeys. He remedied this inconvenience by establishing upon the vault of the church commodious shelters, and furnishing them with all the necessaries of life.

He had by this time displayed his model, by means of which his secret became universally known. No one was weary of admiring the rare skill with which the artist had comprehended all the details, small as well as great, of the construction; the foresight with which he had calculated the internal communications and supports, the openings for the admission of light, the ascending slope, the balustrades, the conduits for carrying off the rain, &c.; ven the minutest details did not escape him. But the greatest admiration was excited by the form and distribution of his materials, and by the mode of their combination, whereby that just system of equilibrium was established which, by mutual pressure produced mutual support, and united the several parts of this splendid dome into one grand whole.

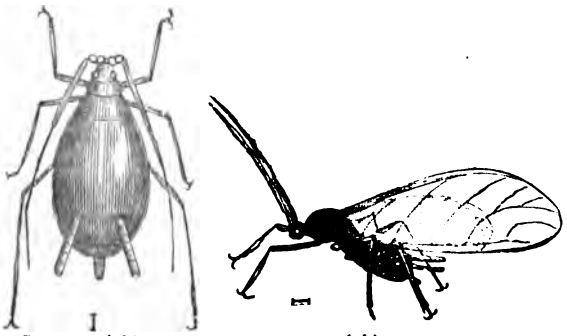
Brunelleschi had the satisfaction before his death to see his cupola completed, with the exception of the external tambour, and a few ornamental details, which he could afford to leave another less gifted individual to complete.

This great and celebrated enterprise, in spite of the multiplied embarrassments and cares which it procured him, was far from occupying the entire life of Brunelleschi. His celebrity caused his assistance to be sought for in many of the great works which were executed in his time, both in civil and in military architecture. Among other productions, we may mention the church of San Lorenzo, and the celebrated Pitti palace, both at Florence.

Brunelleschi died in the year 1444. His remains were interred in Santa Maria del Fiore, with much pomp and ceremony; a monument rising high above his remains that will perpetuate his name, and give to his memory the celebrity which that splendid edifice, after the lapse of nearly four hundred years, still continues to enjoy.

A countryman was shown Gainsborough's celebrated picture of *The Pigs*—"To be sure," said he, "they be deadly-like pigs, but nobody ever saw three pigs feeding together but what one on'em had a foot in the trough."—Jesse's *Gleanings*.

WHAT IS BLIGHT?



Larva of Aphis rosæ. *Aphis rosæ.*

The pursuits of the farmer, the gardener, and all those who are engaged in rural occupations bring them so much in contact with the productions of nature, that just in proportion as they are interested in understanding their qualities, should we imagine them to be acquainted with the different vegetables grown or reared for economic purposes; to understand the cause of the injuries they are subject to; and to devise efficient remedies for those injuries. But it happens unfortunately that these persons are for the most part quite ignorant of the natural history of the objects of their care; they adopt a certain routine of practice which they have been taught; but, as they are ignorant of the science of their processes, they cannot vary them to suit the exigencies of varying circumstances; and thus they are exposed to frequent loss and inconvenience. If they gather in an abundant crop, they are satisfied, and seek not to inquire why it was more or less abundant than that of succeeding years: but, if the crop fail, they attribute the loss to the attacks of birds, of insects, and above all to the influence of *blighting* winds.

In rural pursuits there is probably no word so much used as *blight*. When the wind is easterly and the country clothed in blue mist the farmer looks anxiously towards his crops and says, there is "a *blight* about." The gardener looks at the yellow sickly appearance of his fruit trees, their leaves or blossoms curled up and destroyed and refers this to the effects of *blight*. The hop grower sees his expectations defeated by myriads upon myriads of green insects which completely overrun and desolate his grounds, and he calls this a *blight*. The planter perceives innumerable small caterpillars swarming on his trees where the day before not one was visible: he remembers that an easterly wind has arisen, and calls it a *blight*. Since these and other similar misfortunes receive the indefinite and mysterious name of *blight*, it may be useful, as far as our present knowledge of the subject extends, to afford a full answer to the question *What is blight?*

The notion that certain small insects, such as caterpillers, aphides or plant-lice, are propagated or at least diffused by certain winds or states of the air, called blight, has been generally credited not only by intelligent persons but also by many good naturalists up to a very recent period. Mr. Main says, that when there is an easterly wind, attended by a blue mist, the latter is called a blight, "and many people imagine that the aphides are wafted through the air by this same mist." Mr. Keith says, "The farmer supposes these insects are wafted to him on the east wind, while they are only generated in the extravasated juices, as forming a proper nidus for their eggs." Dr. Mason Good says, "That the atmosphere is freighted with myriads of insect eggs that elude our search, and that such eggs, when they meet with a proper bed, are hatched in a few hours into a perfect form, is clear to any one who has attended to the rapid and wonderful effects of what, in common language, is called a blight upon plantations and gardens."

It seems to be generally admitted that *insects* are connected with blight, and that these insects appear only during certain states of the air. If, therefore, it be admitted that the wind has any thing to do in the production of blight, one of three things must occur: (1,) the wind must produce this blight spontaneously: (2,) the eggs from which the blights proceed must be wafted by the wind to a given spot: (3,) the prevalence of certain winds must have an influence in giving birth to certain insects inclosed in eggs previously deposited by parent insects upon the spot where the blight is seen.

That any state of the air or wind is adequate to the production of animal life, is a proposition so absurd in the present state of our knowledge, that we pass it by as altogether unworthy of serious notice. But that plants may be blighted or withered up by dry parching winds is fully admitted, for when a plant first produces its young branches and leaves, these parts are tender and succulent, and lose their moisture very readily, so that a certain state of moisture and warmth in the air is necessary to effect the solidification of the newly-formed tissue; and if this state be maintained the branches and leaves become fully formed, and no blight appears. But if, as it often happens in this country, a dry easterly wind prevails, the young plants part with their moisture so rapidly that their roots cannot maintain a proper supply, and the tissue becomes dried up and scorched. Such is blight. The only apparent remedy is to supply moisture to the plants so attacked by washing them frequently with a syringe. Under such circumstances of blight it is not uncommon to burn large quantities of wet litter to the windward of the blighted plants, under the supposition that the smoke will destroy the insects which are the imaginary cause of the mischief. We need hardly say that if any good arises from this practice, it must be attributed to the moist warm smoke which envelopes the plants, most probably without destroying a single insect.

We have the evidence of the microscope to assure us that every drop of water teems with life; but it is only a fancy, quite destitute of such ocular evidence, which encourages us to believe the air to be equally prolific. It is difficult to imagine how the eggs of insects can be found in the air, for those of every known species are much heavier than air, and moreover the parent insects display the greatest anxiety to place their eggs upon or near the proper food of the young progeny. "To commit them to the winds," says an accurate observer "would be a complete dereliction of this invariable law of insect economy." And supposing we admit that the eggs are dropped by the mother insects while on the wing,

We must also admit (for there is no avoiding it), that they continue to float about, unhatched, from the end of the summer till the commencement of spring, at which time only the broods make their appearance. Yet when we consider the rains, snows, and winds to which they must be exposed for six or nine months, we think the hardiest theorist would scarcely maintain that a single egg could outweather these vicissitudes, and continue to float in the air.

Nor is it possible that these eggs can be taken up simultaneously by a strong east wind, and deposited on plants, trees, or other objects where a blight suddenly appears, because when the eggs are deposited, they are, with very few exceptions, enveloped in an adhesive cement which glues them to the spot where they were first placed by the parent insect. It follows, therefore, from the statement of these few simple and well-attested facts that the second proposition must be dismissed as untenable.

We now come to the third proposition, and admit at once that the action of certain winds, influenced by variations in temperature, and other meteorological changes, seems to be capable of calling into life and activity, as it were in an instant, innumerable insects, which, one hour

were concealed each within its minute egg, and in the next hour burst forth to join myriads of its kind in the work of destruction. It is generally considered by naturalists, that the eggs deposited in the preceding autumn, having been laid at the same time, and exposed to similar atmospheric changes, are necessarily hatched at the same time in the spring, when, in fact, intelligence is obtained by the inclosed grubs, from the peculiar state of the air, that the fitting time for bursting forth from the egg is arrived. We propose to speak of the aphides or plant-lice more particularly in a subsequent article; but should the reader find it difficult to believe that the vast numbers of blighting insects often observable on plants have proceeded from the eggs deposited the preceding autumn, we may state, that, in the case of the aphides, the fecundity is almost incalculable. Réaumur proved by experiment that one aphis may be the progenitor of 5,904,900,000 descendants during its life: that in one year there may be twenty generations. Mr. Rennie has counted more than a thousand aphides on a single leaf of the hop; and in seasons when they are abundant—when every hop-leaf is peopled with a similar swarm—the number of eggs laid in autumn must be, to use the words of Dr. Good, "myriads of myriads."

The reader will now have no difficulty in finding an answer to the question, "What is blight?" but we shall not perform our duty satisfactorily unless we enable him to convince himself that blight proceeds from insects the eggs of which were deposited by their parents the preceeding autumn, by searching for and finding such eggs during the winter months, so as to be able to watch the phenomena of blight during the following spring, or to apply a timely remedy to its destructive effects.

The word blight is often applied to the mischief done by all such insects as are injurious to vegetation: and therefore includes many insects of various genera. It will be impossible to speak of these within the short limits of the present article, but on future occasions we may notice them. At present we shall restrict our notice to the history of one species only, which has been carefully studied by Mr. Lewis, and detailed in the *Transactions of the Entomological Society*.

If during the winter months the young branches of the apple tree or the hawthorn be carefully examined, certain small round and slightly convex patches will be discovered. These patches are somewhat less than the sixth of an inch in diameter, and are usually attached to the outside of the branches. Each of these little patches is the work of a small white or lead-coloured moth, studded all over with black spots, popularly called "the small ermine." Each patch consists of a number of eggs, deposited in the month of June, covered with a glutinous substance which when newly applied is of a pale yellow colour, but from exposure to the weather becomes dark, and nearly resembles the bark of the branch. The eggs hatch in the early part of autumn, and the grubs remain confined during winter, at which time if the case be opened, a number of these little grubs, which are of a yellow colour, may be readily seen with the aid of a small magnifying glass. As soon as the trees begin to put forth their leaves, the grubs make their escape, and as they are yet in a feeble condition, and cannot eat the outer skin of the leaves, they burrow into them, where they are protected from the weather, and feed upon the pulp of the leaf. As they grow stronger, and perhaps also during some state of the air which is favourable to them, they gnaw their way out, and the anxious gardener, who has hitherto observed only the brownness of the leaves, caused by the burrowing of the insects within, but which he attributes to the withering effect of an easterly wind, is astounded when he perceives myriads of caterpillars swarming on the trees, and proceeding with alarming rapidity in their devastating course. The fact of their burrowing sufficiently explains the reason of this sudden appearance: it shows how one day not a single caterpillar may be visible on the trees, and the next, they may be swarming with larvæ of so large a size as so forbid the idea of their having been recently hatched. The webs so often seen covering the branches of apple trees, and the hawthorn of the hedges, are the work of this little caterpillar; which after a time becomes of a lead colour spotted with black, and when full grown spins an oblong white cocoon, within which it turns to the pupa; soon after, the moth hatches, and generally about the month of June, if it be a female, deposits her eggs in the way we have already mentioned.

The cuts which accompany this article are highly magnified representations of the larva and the perfect insect of the rose-plant aphis: the small line which accompanies each figure is the actual size of the insect.

Among the various remedies for blight the application of the spirit of tar to the bark has been greatly commended; but Sir Joseph Banks found it sufficient for the protection of his apple-trees simply to remove the rugged and dead old bark, and then scrub the trunk and branches with a hard brush.

PRAYER IN CHILDHOOD.

KNEELING in the congregation,
Bending at the lonely shrine,
To the Lord of all creation,
Saviour of the world, and mine—
Though his mercies well may raise
Man to loftiest heights of praise,
And the sins of man should be
Seals of man's humility—
Yet how oft I find I'm still
Strong in a rebellious will,
High in pride, in fervour low—
Wherefore, wherefore is it so?

Thoughts, whose incense should aspire
From the altar of the heart,
Kindled at the sacred fire,
Faith, and Hope, and Love impart,—
Thoughts, to which celestial birth
In the spirit's depths seemed given,
With the grosser fumes of earth
Mixed, and marred, ascend to heaven,
Cold and lifeless, dull and slow—
Wherefore, wherefore is it so?

I can bend my backward gaze
To the dream of childish days;—
Oh! what else can childhood seem
Than a swift and happy dream,
Bright—while yet our sorrows sleep—
Whence at length we wake, and weep?—
Yes! I can point to early years
Memory's glass, though dimmed with tears,
And in thought once more survey
Times, when I was wont to pray
By the evening star's first shining,
Ere upon my bed reclining,
And when morn, with radiant finger
Smiting soft the curtained pane,
Bade those "slumbers light" not linger,
Which shall ne'er be mine again.—
Then, indeed I *lisped* my prayer,
Yet my spirit seemed to share
Twice the warmth it now doth know—
Wherefore, wherefore is it so?

'Tis, when the heart is soft and young
That most to heavenly strains 'tis strung—
Ere yet the world's rude discord grieves
The song of heavenward hope it weaves;
Ere yet the world's cold fetter flings
Its burden on the spirit's wings,
And down with deadening influence weighs
The upward flight of prayer and praise;
Or thoughts that bind the soul in sin
Are fortressed into strength within;
Or idle sneer and impious doubt
In secret ambush lurk without,
And with a fiendish joy efface
The tender growth of early grace!——J. S. B.

THE STONE-QUARRIES OF EGYPT.

WE give this article the foregoing title, because it is our object to point attention to the localities which gave birth to those enormous masses of stone which have been, during former ages, distributed over the land of the Nile from south to north. These still remain; but, for the most part, show no relation to the soil where they are now found to exist. The enterprise and research of modern travellers have, however, discovered rational means of accounting for most of the works of art and might, by which any of the ancient nations of the world have signalized themselves in the view of the people of succeeding ages.

It is, for our present purpose, more correct and comprehensive to speak of the *land of the Nile* than merely of *Egypt*. The "valley of the Nile" is another elegant term for this wonderful region, which comprehends the countries of Egypt, Nubia, and Abyssinia. The river may be said to flow down from the Mountains of the Moon through Abyssinia, Nubia, and Egypt, into the Mediterranean Sea, or from south to north. Nubia and Abyssinia formed the Western Ethiopia of the ancients; and Egypt has always been considered to be divided into Upper and Lower; the Upper being southward and the Lower to the north; the latter comprising the Delta, near the sea.

Having thus spoken of the geographical character of the countries under our notice, we will now consider them in a geological point of view, restraining our observations, however, to the region properly receiving the name of EGYPT.

The land of Egypt affords to the notice of the geologist four distinct regions; three in the Upper Egypt, and one in the Lower.

1. The most southern, the *Granite* region, which extends from Philæ, through the cataract district to Syene. It affords besides granite, also *Syenite*, and some other crystalline primitive rocks. The finest granites and syenites, are red and highly crystallized; and are remarkable for their durability and the fine polish which they are capable of receiving. Colossal statues, pillars, obelisks, and even whole temples, are constructed of these beautiful rocks. Some of the pyramids are said to have been originally cased with slabs of granite.

2. The next, or *Sandstone* region, lies to the north of the granite, and extends from Syene, (Assouan,) northwards to Esneh, or over about one degree of latitude. This sandstone is by some authors referred to the *grès*, or sandstone of Fontainebleau, the paving-stone of Paris; by others, to the *molasse de Genève* of Switzerland; but all are agreed in considering it as a comparatively recent deposit. Its colours are white, grey, and yellow; it is very soft and easily worked, and the buildings constructed of it would probably not have long resisted the weather, had they not been covered with a coloured varnish. The great temples, and many pillars and obelisks, are of this sandstone; but it does not appear ever to have been used in building private houses.

3. To the north of the sandstone, but to the south of Thebes, is the *Limestone* region. This substance was formerly much used as a building material. The catacombs of Thebes are situated in this limestone.

4. The whole of Egypt to the north of the limestone, that is, the *Delta* region, is principally composed of *alluvium* (floating mud) deposited from the waters of the Nile.

It will be seen that the first three geological regions here spoken of belong to Upper Egypt, as likewise a part of the fourth.

Before speaking more directly of the quarries of Egypt, it may be well to observe that a quarry is an excavation in the ground, from whence are extracted marble, stone, or chalk, for the purposes chiefly of sculpture and architecture. The name appears to have been applied to such excavations from the circumstance that the materials obtained from them, are there *quadrated*, or formed into rectangular blocks.

All the materials before-mentioned have been employed in the formation of the massive works which yet remain to attest the magnificence of the ancient people of this country. The walls of most of the temples were constructed of sandstone, which appears to have been chiefly obtained from the quarries stretching along the banks of the Nile, in the mountains of Selseleh; but the obelisks and statues which adorned those temples are formed of Syenite or Oriental granite, drawn from the quarries in the islands of Philæ and Elephantine, and particularly from those vast excavations in the mountain-terraces about Syene. At Sais, in the Delta, we are told, there once stood a temple, formed of a single block of granite, which had been floated down the Nile on a raft from the quarry in Elephantine. Two thousand men were engaged for three years in the removal of this temple, which was more than thirty feet in length, twenty in breadth, and twelve in height; the stone was, on the average, about five feet in thickness. One of the pyramids is formed of limestone; a carbonate of lime, of a light gray colour; and the same kind of stone forms the interior mass of another pyramid, while the outside is covered with red granite.

The region of the granite, which may be distinguished by referring to the modern town of Assouan, extends from west to east, on both sides of the river; but the best specimens lie near the stream, and the granite loses its beautiful appearance the further we recede from the east bank towards the Desert. The red granite thus occupies only a small space, forming a kind of portal, or entrance, through which the Nile bursts into Egypt, forcing its way amidst innumerable isolated cliffs, which consist of the most beautiful rose-coloured granite. This red granite is known by its excellent colour, the magnitude of its crystallized component parts, and its hardness; owing to which last quality, it receives an exquisite polish. The rose-coloured feldspath, which sometimes approaches to a brick-red, forms about two-thirds of the mass: the intermediate spaces are filled with the sparkling mica and the glassy transparent-looking quartz. Hornblende is seldom found mixed with it. The Theban obelisks, and many other works of art, were made of this material.

In Upper Egypt, the dryness of the atmosphere, and the general steadiness of the temperature, have contributed, with the hardness of the material, to preserve the polished surfaces of the obelisks, and their more delicate sculptures, uninjured during the lapse of centuries: but those near the sea coast have had their surfaces decomposed by the action of the moist atmosphere.

Near the limits of the red granite are found several varieties, occupying a still more limited space, and forming a transition-series between this and the common granite. They differ from the red granite and from one another, both in colour, component parts, and the size of these component parts, some of which are very coarse, and others small and fine. We see in the existing specimens of Egyptian sculpture, that they often selected some of these varieties in preference to the red-coloured one.

The stone-quarries of Egypt and Nubia shew distinctly to the present day, the mode in which the stones were got out. In the face of the rock are seen a number of long horizontal lines, one above another: the vertical distance between any two adjoining lines shews the thickness of the piece cut out; while the length is clearly marked in several cases, either by the termination of the face of the rock on each side, or by a vertical mark on it, extending from one horizontal line to the next. The stones were taken out of the quarry just in the shape and size required, and were detached from the

mass one after another, by means of little wedges inserted in holes made on the two faces of the stone. Though this is a slow process, it is economical as far as the material of the rock is concerned, and was employed both in the granite quarries of Syene, and in those of Carrara, in the time of the Romans. At the latter place, it is the practice, at present, to blast the marble, by which about three-fourths of the material are wasted. The wedges used in Egypt were either iron ones struck all at once, or wooden ones which were moistened, so as to swell and start the stone from its position.

It appears that the catacombs and excavated temples, which are numerous in Upper Egypt, are, for the most part, the results of the quarries of which we have been hitherto speaking; that is to say, the quarried excavation became a catacomb or a temple*:—both being alike devoted to the interment of the dead.

At the quarry of Gartaas, in Nubia, about twenty-five miles south of Assouan, is a small chapel, supposed to have been for the use of the workmen. The doorway, as in the case of most of the quarries in these parts of the Nile, fronts the river, and forms the entrance to the long open galleries which conduct to the excavations. The quarries on the east side of the river, at Hadjar Selseleh, contain representations, cut in the stone, of the implements used in quarrying: two of them look like wedges, but differ somewhat in shape; and another is in form precisely like the modern lever, which is used by masons for raising stones. It has a circular top, which might be a kind of ring, then a horizontal bar or bolt, while the lower part is a truncated triangle, with the base forming the lowest part of the instrument. From the numerous inscriptions existing in these quarries, it is evident that they were worked likewise by the Greeks and Romans.

The sandstone quarries of Hadjar Selseleh furnished the chief materials for the temples, as the granite quarries of Syene (Assouan) did for the obelisks and colossal statues. The Egyptians were careful to cut out such pieces as suited their purpose best, from among the several varieties of sandstone; and it is as easy to find large unbroken masses of this substance as in the quarries of Syene. Beams for architraves, to the length of twenty-five or thirty feet, and large pieces suitable for colossal sphinxes of nearly equal length, were easily procured in these quarries. The stone is soft and very easily worked. This is shown in the case of the colossal sphinx-head of the British Museum, which suffers considerably from the damp atmosphere of our climate.

The vast sizes of the stones that were transported from the quarries of Syene, to the most remote parts of Egypt, may be inferred from the huge statues, obelisks, and monolith† temples, of which specimens now exist. At the present day, there is a large cubical block lying on the road, between the granite quarries and Syene, which, from some cause or other, has never reached its destination. It has sculptures on two of its vertical faces, and is more than thirty feet every way. In another place was observed a block for a colossus, about sixty-eight feet high. It is supposed that the larger masses of rock used in constructing temples, &c., were taken in the rough to the place where they were to stand, and there received their full shape and decoration; but that the smaller members of the architecture were completed, or nearly so, in the quarry.

The ancient Egyptian method of producing the obelisk was as follows: They marked out in a hill a stratum for the purpose; levelled the surface with digging tools; and then, with a chisel, cut some furrows or channels to define the opposite sides. These being excavated to a certain depth, they tore the obelisk from the rock by the aid of the wedges, of which, vestiges now remain. In a similar way are still cut in France pieces of granite, forty-five feet long and eighteen broad. It was easier to seat a colossus on its pedestal, than to deal with an obelisk; the former having a comparatively large base, and being less liable to snap asunder. The obelisks when cut were placed upon sledges, and drawn to the river, where, a vessel or raft, purposely constructed, was firmly tied to the shore; and a bridge being made out of strong beams, from the edge of the shore, or from steps cut in the bank, and being made to project as far as the raft, any weight, by means of rollers, could be transferred to it. The stone was thus conveyed by the river to any part of Egypt.

The Egyptians being contented with low plinths instead of stylobates, the obelisks were thus erected; they were dragged from the river along a causeway made of earth or stones, until the base of the obelisk impended over a hole made in the plinth. A tower of beams was then constructed, ropes tied round the top of the stone, and engines so disposed that it could be elevated. When it was raised to the perpendicular, it subsided into the cavity of the plinth by its own weight. In carving the figures the Egyptians seem to have used the same tools as the moderns; and they seldom used a pedestal for the obelisk.

* See two interesting articles on *Cavern Temples and Tombs*;—Nos. 53 and 64 of this work.

† The word "*monolith*" is from the Greek, and implies *the being made of a single stone.*

UNINVITED GUESTS IN THE DESERT.

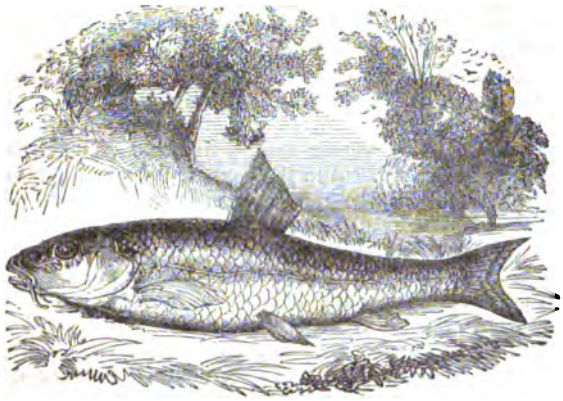
All was activity and bustle to prepare the coming feast. The kid was killed and dressed with great dexterity and despatch; and its still quivering members were laid upon the fire and began to emit savoury odours, particularly gratifying to Arab nostrils. But now a change came over the fair scene. The Arabs of whom we had bought the kid had, in some way, learned that we were to encamp near; and, naturally enough, concluding that the kid was bought in order to be eaten, they thought good to honour our Arabs with a visit, to the number of five or six persons. Now the stern law of Bedawin hospitality demands that, whenever a guest is present at a meal, whether there be much or little, the first and best portion must be laid before the stranger. In this instance the five or six guests attained their object, and had not only the selling of the kid, but also the eating of it; while our poor Arabs, whose mouths had long been watering with expectation, were forced to take up with the fragments. Beshârah, who played the host, fared worst of all; and came afterwards to beg for a biscuit, saying, he had lost the whole of his dinner.—Robinson's *Palestine.*

CANADIAN FOLIAGE.

Both the spring and autumnal colouring of the vegetable world are richer and fresher here than at home. Vegetation, long oppressed by a severe winter, bursts at once into luxuriousness and liberty, with the apparent gusto of animal sensation, as if determined to enjoy the genial but transient summer to the utmost. In the autumn the juices are not dried up in the leaves by a slow sereing process, as in England, before they fall off shrivelled and discoloured, but the first smart night-frost in September changes the foliage at once, with much sap still circulating vigorously, into red, brown, yellow, or other tints, as if by a direct chemical or dyeing operation. All shall be green during our evening walk, and in the morning the aspect of the forest may be entirely metamorphosed, and we are presented with the most rich and varied picture of different but harmonious hues according to the nature of the leaf, its smoothness of surface, strength of texture, and the age of the branch from which it proceeds. The woods, at this season, present one magnificent and unrivalled mosaic painting. The birch and the white ash turn brown and yellow in a night; the butter-nut tree adopts a buff livery; the maple becomes of a rich blood red—every family has its own peculiar colouring, while the hardy pine tribe leaf defies the cold, and preserves its green unaltered amidst the general change. The nice grades of colour vary infinitely, according to the age and position of the trees, the quality of the soil, the earlier or later cold weather, the severity of the frost, with many other causes that have hitherto escaped observation.—*Trifles from my Portfolio.*

FRESH-WATER FISH. IX.

THE GUDGEON, (*Cyprinus Gobio.*)



Loe, in a little boat where one doth stand,
That to a willow bough the while is tied,
And with a pole doth stir and raise the sand,
Whereas the gentle streame doth softly slide,
And then with slender line and rod in hand,
The eager bite not long he doth abide.
Well loaded is his line, his hooke but small,
A good big cork to bear the stream with all.
His bait the least red worme that may be found,
And at the bottome it doth alwayes lie;
Whereat the greedy gudgeon bites so sound,
That hooke and all he swalloweth by and by:
See how he strikes, and puls them up as round
As if new store the place did still supply;
And when the bit doth die, or bad doth prove,
Then to another place he doth remove.

THE present method of fishing for gudgeons is very similar to the picturesque description contained in the above lines quoted from *The Secrets of Angling*, a poem in three books by John Davers, or John Dennys, Esq., for it is uncertain to which of these gentlemen the poem is to be ascribed. The entry at Stationers' Hall, February 28, 1612, has only the initials J. D. attached to it; but Walton has no doubt that Davers is the real author.

The gudgeon is sometimes called the silvery olive carp: its upper lip is furnished with barbs, and the dorsal fin and tail spotted with black. One species only is known in this country, but probably another may exist. It is common in many parts of Europe and exhibits a striking instance of the power of fishes to accommodate their habits to various climates. This faculty is not so remarkable in marine fish because the temperature of the sea does not greatly vary in different latitudes; but the temperature of rivers must correspond with that of the soil and atmosphere through which they flow. Dr. Russell met with gudgeons in Syria; and Aristotle mentions them as being natives of Greece. They are common in Germany, where a smaller variety, called wapper, is also found.

The gudgeon is very common in our rivers, canals and still waters: it is found in greatest perfection and most abundantly in moderately swift rivers which flow over a gravelly soil. Their numbers are so immense that some naturalists have imagined them to spawn twice a year. It is most probable, however, that they spawn only once, but the time of spawning is different in different waters. The gudgeon spawns about May, but does not deposit its ova at once, but at distant periods extending through the space of about a month.

Some waters are more favourable than others to the growth of gudgeons. They are generally small fishes, seldom exceeding eight inches in length. Occasionally however they have been taken of larger size. Mr. Pennant notices one caught near Uxbridge that weighed half a pound. Mr. Daniel states that he had some in a pond of his own, and that their average weight was five or at most six to the pound. Gudgeons are often taken in the extensive waters of some parts of England in nets, nullies, keils, &c., for the purpose of baiting other fish or for the markets. They are greatly esteemed as food especially for invalids, and are reckoned to be very easy of digestion.

"They be scattered up and down every river in the shallows, in the heat of summer; but in autumn, when the weeds begin to grow sour and rot, and the weather colder, then they gather together, and get into the deeper parts of the water."—WALTON. The gudgeon is a ground feeder, as its barbs imply;—its food is water insects, small mollusca, and the spawn and young fry of other fishes.

Gudgeons are usually found in shoals; and will take almost any bait; so much so that a person who is easily imposed on by shallow devices is often called a gudgeon. Perhaps the most tempting bait is a small red worm as noticed in our motto; where the raking or the stirring up of the bed of the river is also noticed and is still adopted as an essential process in gudgeon fishing. The object of raking is to disturb the caddies, and various minute worms, water snails, &c., which lurk among the stones and gravel at the bottom of the stream and on which the gudgeons feed. The disturbance causes the fish to hasten to the spot for the purpose of getting an easy supply of food. Mr. Blaine says, that in the Thames as many as fifty dozen of gudgeons have been taken in a day.

A FIRST LANDING IN THE WESTERN IND.

THE charms of a tropical country, when novel, are calculated to make a delightful impression on the mind: and as we roamed along the lanes and cane-fields of Santa Cruz during the first few days after our arrival, we could easily conceive the pleasure enjoyed by Columbus and his followers, when the fertility and beauty of West Indian scenery first burst upon their view. Many beautiful productions of nature however, not indigenous, are now added to the catalogue of wonders which inflamed the imagination of Columbus.

Almost every plant we saw as we drove or rode about the country, from the largest tree to the smallest weed, was unknown to us, and formed the subject of a somewhat troublesome inquiry. It was a new world to us, as well as to its first discoverer; and several days must be passed amidst these scenes before one can obtain anything like a familiar acquaintance with the productions of nature. Splendid exotic plants, which would be regarded as rarities even in the green-houses of England and America, are cultivated in the little gardens of Santa Cruz; and the wild flowers are scarcely less attractive. Amongst them we observed large kinds of convolvulus, white and pink, yellow bell-flowers, scarlet creepers, bright blue peas of singular beauty; and, to crown all, the "Pride of Barbados," sometimes crimson, sometimes yellow, with butterfly petals, long pendant stamina, and acacia-like leaves, adorning the hedges in great profusion. The trees are for the most part bearers of fruit, and many of them are covered with luxuriant foliage. To select a few of the most remarkable, I would just mention the plantain and banana, (nearly the same in appearance,) with pendant leaves of vast dimension, and a profusion of finger-like fruit growing in clusters; the wild orange tree, covered at the same time with fruit and flowers; the lime, which lines the hedges, and is equally fragrant, producing in abundance a small kind of lemon; the guava, with pink blossoms and pear-like fruit, also frequent in the hedge-rows; the mango, heavily laden with foliage, and with fruit in its season; the mammee, growing to a great size, and profusely covered with glazed dark green foliage; lastly, the tamarind, with its light feathery leaves and long pods, which contain the fruit used for a preserve, spreading its branches far and wide, like the British oak.—GURNEY.

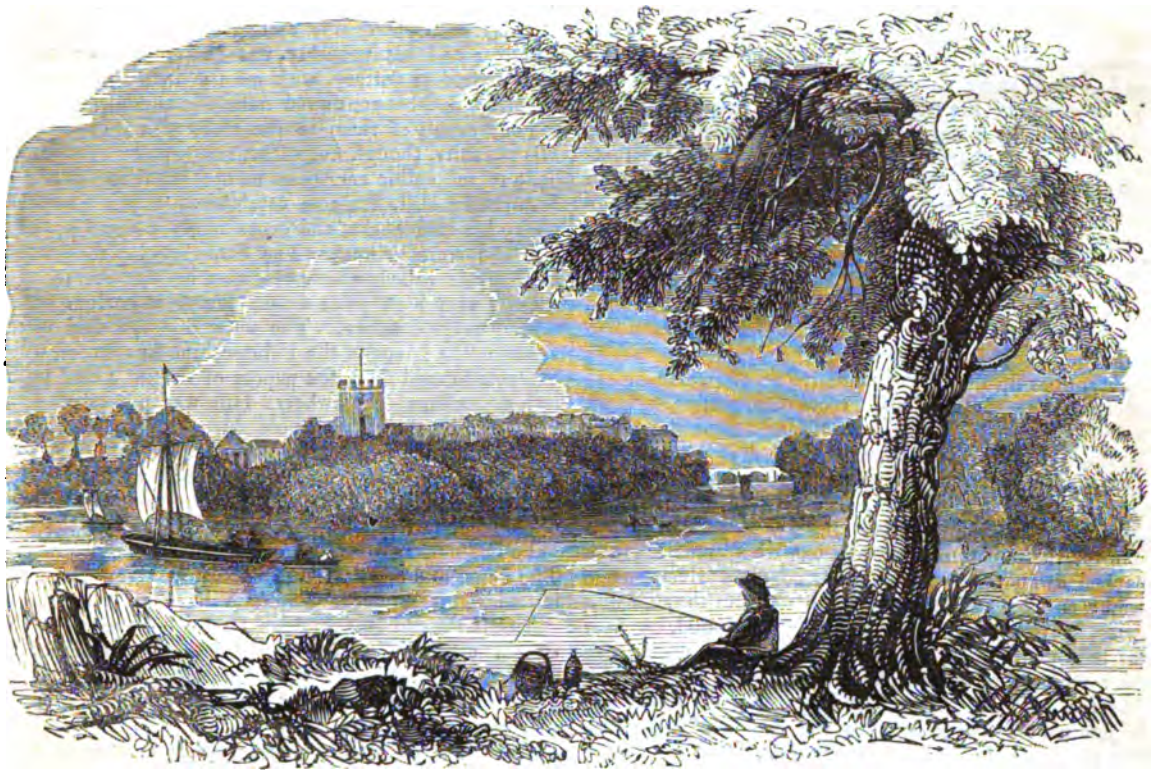
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 601. NOVEMBER 13TH, 1841. {PRICE ONE PENNY

THE BANKS OF THE THAMES. IX.



KINGSTON ON THAMES.

THE part of the river Thames to which we had conducted the reader in our last article, viz., the part contiguous to Hampton Court, presents a remarkably tortuous course, unfavourable to navigation, but greatly conducive to the picturesque appearance of its banks. A walk from Twickenham to Hampton, by the usual public road, would not exceed three miles, whereas by water the distance is seven or eight.

The portion of the river included between Hampton and Kingston is known to the lovers of poetry as the scene of one of Pope's finest poems. A lady of distinguished beauty, Mrs. Arabella Fermor, while being rowed along the river with a party of friends, had a lock of her hair stealthily cut off by a gallant who formed one of the party: the incident was trifling, and gave cause for offence to the family of the lady, but on this trifle Pope founded a poem of exquisite beauty.

Kingston, the next town to Hampton, but on the opposite side of the river, is one of the most ancient in this part of England. In the market-place of Kingston the Saxon monarchs of England used to be crowned, either on a raised platform in the open air, or in the church. Edward the elder, Athelstan, Edmund, Edred, Edwy, Edward the Martyr, and Ethelred, were thus crowned, between the years 900 and 978. Kingston was the scene of a romantic tale told by Hume the historian, relating to King Edwy and his Queen Elgiva, in which a knot of ambitious nobles effected the murder of the queen, after brutal violence, in revenge for a slight put upon them by the king and queen. Remote as was the period of these events, there seems to be proof that Kingston is the site of a town many centuries older, or at least of an encampment; for, on digging the foundation for a new bridge, a few years ago, several Roman military weapons, consisting of spear-heads and swords, of beautiful workmanship and in a good state of preservation, were discovered. About the same time also several human skeletons, with Roman ornaments lying near them, were discovered in a neighbouring field on the Surrey side of the river. In a former article we alluded to the conjectures which have been made respecting the probable passage of Cæsar over the river near Weybridge; but these discoveries have given rise to the opinion, that Cæsar, on quitting his encampment on Wimbledon Common, crossed the Thames at Kingston; and that the skeletons were those of some of his troops that fell in endeavouring to force the passage of the river against the opposing Britons, whose slain are supposed to be interred in a tumulus (not yet opened) in a field called the Barrow field, on the Middlesex side of the river, and about half a mile from the spot where the weapons were found.

Over the Thames at Kingston was formerly one of the most ancient bridges on the river, it being mentioned in a record in the eighth year of Henry the Third. During the intestine commotions which from time to time disturbed the country, the bridge was frequently destroyed, to cut off the communication between Surrey and Middlesex. The bridge existing until about twelve or fourteen years ago was of wood, about five hundred

feet in length, and endowed with lands to keep it in repair. In the year 1828, however, it was replaced by an elegant structure of Portland stone, consisting of five spacious elliptical arches, and surmounted by a handsome cornice and balustrade, with galleries projecting over the piers: the expense being 40,000*l*. The town of Kingston carries on a considerable amount of trade; and since the opening of the London and South Western Railway, which passes close by Kingston, and which has a station at that place, the bustle of the town has considerably increased, and the route to many towns on the Middlesex side, which used to be followed on the northern side of the river, is now made through Kingston and over Kingston Bridge. With regard to the municipal affairs of the town, it is probable that the recent act has made some changes; but under the old system, the election of the members of the corporation was distinguished by a singular custom, said to be sanctioned by the ancient charter of the town. A match at football took place, in which the lower orders engaged with so much zeal and activity, that the inhabitants of the principal streets found it expedient to barricade all the windows in front of their houses.

Between Kingston and Twickenham the Thames presents a large number of swans, the conservancy of which is a curious part of the privileges of the Corporation of London. The Lord Mayor, either in person or by deputy, goes up the river annually, accompanied by the officers of the Vintners' and Dyers' Companies, to mark the young swans. By an act of parliament passed in the reign of Edward the Fourth, it was declared a felony, punishable with imprisonment for a year and a day, and a fine at the king's pleasure, to steal the swans' eggs. Coke mentions a curious law which was once in operation, for the punishment of any one who stole a lawfully marked swan from any open or common river. The swan was taken and hung by the beak from the roof of a house, so that the feet just touched the ground. Wheat was then poured over the head of the swan, until there was a pyramid of it from the floor sufficient to cover and hide the bird completely: this quantity of wheat was the fine paid by the culprit to the owner of the swan. The swans on the Thames have been alluded to by more than one of our poets, among whom is Spenser, who says:—

> See the fair Swans on Thamis' lovely side,
> The which do trim their pennons silver bright;
> In shining ranks they down the waters glide;
> Oft have mine eyes devoured the gallant sight.

The part of the Thames at which we have now arrived is particularly rich in associations connected with our great writers and wits. Thomson, Pope, Horace Walpole, and many others whose names are known to every one, either lived or died in this immediate vicinity. Teddington, Twickenham, and Richmond, with the intervening country, form the locality to which we allude. Teddington is a small, quiet place, distinguished in a commercial sense as the spot to which the tides of the river ascend, but no higher. The little church at Teddington, with the surrounding villas and their ornamental gardens, presents a very pleasing scene as viewed from the river. Paul Whitehead, the poet laureate, and Dr. Hales, a man of scientific attainments, lie buried in the church. The Earl of Leicester, a favourite of Queen Elizabeth, and William Penn, the quaker, were residents at Teddington.

A little below Teddington we come to Strawberry Hill, a mansion celebrated as the residence of Horace Walpole, where he was visited by most of the poets and wits of the age. The site was originally occupied by a small house let out as a lodging-house. This passed into the hands of Colley Cibber, a dramatic writer, who penned some of his productions there. The third possessor was a Mr. Chenevix, from whom it passed into the hands of Horace Walpole, about a century ago. He amused himself for many years in enlarging and beautifying the house and the grounds attached to it, and storing them with pictures, busts, and antiques of every description. In the architecture of the building, he borrowed specimens from the choir of the Cathedral Church at Rouen, from the tomb of Archbishop Wareham at Canterbury, and from St. George's Chapel at Windsor. It has been well observed notwithstanding, that however elegant the internal decorations were, the place may be considered as a picture of the mind of him who formed it, in which there was nothing *great*. He was the son of a prime minister, Sir Robert Walpole, whose power was of long duration; his rank as Earl of Orford was among the higher orders of nobility; and his property was large. He was thence early inured to flattery, with all the indulgences of his situation, and he continued naturally enough to expect the enjoyment of them to the close of a very long life. His pursuits, though not without taste and elegance, had little of masculine energy or mental capaciousness. At Strawberry Hill, Walpole established a printing-press, where his own works, and occasionally a *jeu d'esprit* of a friend, were printed. The Strawberry-Hill editions, as they are called, which are now become scarce, command a very high price among the more curious collectors of printed works. The most distinguished of the works is the Lives of the Painters and Engravers, which Walpole formed from the papers of Vertue, aided by his own collections. Strawberry Hill was possessed a few years ago by the Honourable Mrs. Damer, to whom it was bequeathed by Horace Walpole.

The village of Twickenham, at which we next arrive, is more celebrated, perhaps, for having been the residence of Pope, than for all other circumstances put together. Who has not heard of "Pope's Villa at Twickenham"? The name of Pope's Villa is even now given to a building which is no more Pope's Villa than the Queen's Palace is the old Buckingham House. Pope built a villa which, after his death, passed into the hands of Sir William Stanhope; the third possessor was the Right Honourable Welbore Ellis, afterwards Lord Mendip; and the fourth was Lady Howe, who has replaced the old villa by one of more modern construction; so that the real villa of Pope does not now exist. Much indignation has been expressed by many writers at an act which tended so much to break up the local associations of the great poet, but Mr. Mackay remarks, that however much this lady may have destroyed of the poet's dwelling, she has left the *Grotto* for the reverence of posterity, by far the most valuable part of it, containing the rooms in which he was accustomed to study, and in which he entertained the poets and wits of his day.

The grotto here alluded to was made by Pope, about the year 1715, as a subterraneous passage to a garden on the other side of the road: and in a letter which he wrote to his friend Edward Blount, he gives an animated description of the manner in which he had planned and laid out this favourite retreat.

A little cell, on the left hand side of the grotto, used to be Pope's study, on almost every stone of which visitors have scratched their names. A cell on the right hand side was formerly occupied as a kitchen.

"Pope's willow" is almost as well known to fame as "Pope's Villa." The poet planted a weeping willow in his grounds, which was considered one of the finest specimens of that tree ever seen, and was protected and propped in its old age with great care by those who succeeded in the possession of the estate. Some stanzas were addressed to this tree by an admirer of Pope, of which we will here give two:—

> Weep, verdant willow, ever weep,
> And spread thy pendant branches round:—
> Oh! may no gaudy flow'ret creep
> Along the consecrated ground;
> Thou art the Muses' favourite tree—
> They loved the bard who planted thee.

But all the Muses' tender care
Cannot prolong the fatal date:
Rude Time will strip thy branches bare,
And thou must feel the stroke of Fate:—
E'en thou, the Muses' favourite tree,
Must fall, like him who planted thee.

But "rude time" was not the only one who stripped the branches bare. The tree was almost *picked to death*, and then rooted up, a fate which has made many admirers of the poet very indignant against the proprietress of the grounds. But Mr. Mackay has, we think, stated the matter in a fair and just form, in the following remarks:—

There was formerly a willow-tree overhanging the river, which has also been removed; but with the destruction of this Lady Howe is not chargeable. So numerous were the visitors, and such pilferers were they, where a relic was concerned, that the tree was soon stripped both of leaves and branches. Slips of it were sent for from all parts of the world; and the owner was at last so pestered, that she was obliged, in self-defence, to uproot the tree, and make a relic of it, which would not entail so much trouble upon its possessor. Nothing but the root now remains, which is safely housed in the grotto; forming a substance too hard to be taken away in little bits by the pen-knife of the visitor, and too bulky to be carried off entire. Visitors used formerly to play the same tricks with the very stones and spars of the grotto; but, upon inquiry of our guide, we were informed that such was not the case now to any great extent, although occasionally a person is detected trying to notch off a flint or a shell, and a lady holding an open reticule ready to receive it.

The same gentleman, who visited the grotto at Twickenham a year or two ago, said that he apprehended the grotto would exist but a little time longer; as the villa was advertised for sale, and there were rumours of an intention to pull down the grotto. In allusion to the manner in which local memorials of our poets and philosophers are gradually destroyed, he said that it is in vain to hope, unless Pope's Villa falls into the hands of an enlightened purchaser, that the grotto will be preserved, or that even a stone will be erected to mark the spot, and to say "HERE POPE SUNG."

Of the Thames in the vicinity of Twickenham, it has been remarked by writers of all grades, poets, painters, and topographers, that it presents scenes of extraordinary beauty. The river rolls on through meadows of the richest verdure, while its banks are adorned with the contrasted beauty of the villa and the cottage, in a long succession of edifices, which mark the taste and the opulence of those who possess them. In the middle of the river is a little island called Twickenham Ait, or more commonly "The Eel-pie Island," upon which there was until very lately a tavern famous for the mode adopted there in dressing the eels caught in the river.

HOPE! of all ills that men endure,
The only cheap and universal cure!
Thou captive's freedom, and thou sick man's health!
Thou loser's victory, and thou beggar's wealth!
Thou manna, which from heaven we eat,
To every taste a several meat!
Thou strong retreat! thou sure-entail'd estate,
Which nought has power to alienate!
Thou pleasant, honest flatterer! for none
Flatter unhappy men, but thou alone!—COWLEY.

IN the Church of St. Peter at Cologne, the altar-piece is a large and valuable picture by Rubens, representing the martyrdom of the Apostle. This picture having been carried away by the French in 1805, to the great regret of the inhabitants, a painter of that city undertook to make a copy of it from recollection; and succeeded in such a manner, that the most delicate tints of the original are preserved with the most minute accuracy. The original painting has now been restored, but the copy is preserved with it; and even when they are rigidly compared, it is scarcely possible to distinguish the one from the other.

ON THE

METHODS USED BY THE ANCIENT EGYPTIANS FOR TRANSPORTING AND ERECTING LARGE MASSES OF STONE.

THE character of the old Egyptian architecture is massy grandeur, adapted to giants rather than men. Hence it becomes a curious matter of speculation to refer to the means which we may suppose the ancient denizens of the Valley of the Nile to have employed, for *removing* from the quarries to their due locality the enormous stones which are scattered over the face of the country, and then for *erecting* them in a state of apparently imperishable firmness.

The extent of the quarries at Selseleh, in Upper Egypt, which we have noticed in a former paper, is very great: they are, in fact, of such an extent that masses of any dimensions might be hewn from them. In one of the quarries at El-Maasara the mode of transporting the stone is represented. It is placed on a sledge drawn by oxen, and is supposed to be on its way to the inclined plane that led to the river, vestiges of which may still be seen a little to the south of the modern village.

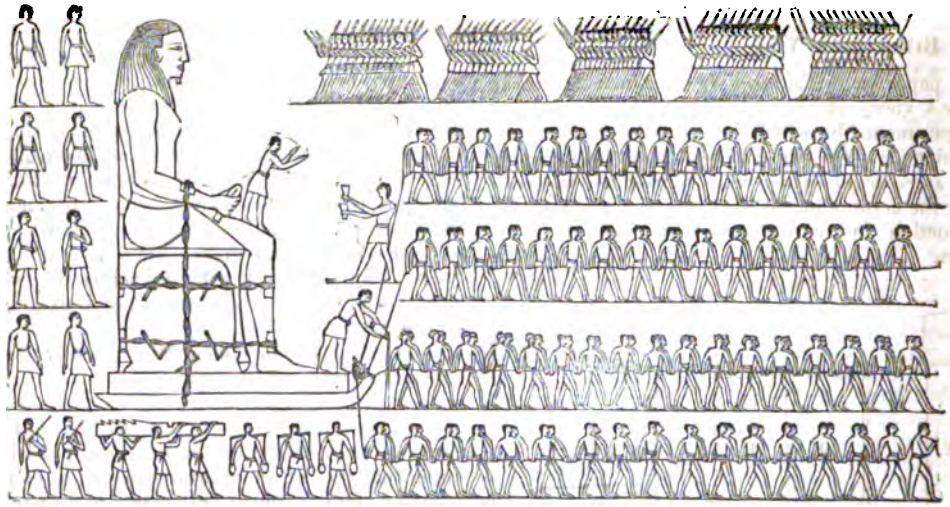
Sometimes, and particularly when the blocks were large and ponderous, men were employed to drag them, and those who were condemned to hard labour in the quarries as a punishment appear to have been required to assist in moving a certain number of stones, according to the extent of their offences, ere they were liberated. This seems to be confirmed by the following inscription, found in one of the quarries of Gertassy, in Nubia: "I have dragged 110 stones for the building of Isis at Philæ." In order to keep an account of their progress, they frequently cut the initials of their names, or some private mark, with the number, on the rock whence the stone was taken, as soon as it was removed, many of which signs occur at the quarries of Fateereh.

The blocks were taken from the quarry on sledges, and in a grotto behind E'Dayr, a Christian village between Antinoë and El Bersheh, was first discovered by Captains Irby and Mangles the representation of a colossus, which a number of men are employed in dragging with ropes. This colossus was probably not hewn in the hill of El Bersheh, but it is exceedingly interesting, from its being of a very early age, and one of the very few paintings which throw any light on the method employed by the Egyptians for moving weights, for it is singular that we find no illustration of the mechanical means of a people who have left so many unquestionable proofs of skill or capacity in these matters.

An engraving of this picture, which represents the transportation of a colossus, accompanies the present article. In the original picture 172 men, in four rows of 43 each, pull the ropes attached to the front of the sledge. The number may be indefinite, and it is probable that more were really employed than are indicated in the painting. In order to obtain a more convenient size for engraving we have diminished the number of men in each row before and behind: otherwise we have given a fair representation of the Egyptian artist's work. A liquid, probably grease, is poured from a vase, by a person standing on the pedestal of the statue, in order to facilitate its progress as it slides over the ground, which was probably covered with a bed of planks; though they are not indicated in the painting.

Some of the persons employed in this laborious duty appear to be Egyptians: the others are foreign slaves, who are clad in the costume of their country: behind are four rows of men, who, though only twelve in number in the original, and diminished by us to *eight*, may be intended to represent the sets which relieved the others when fatigued.

Below are persons carrying vases of liquid, perhaps water, for the use of the workmen, and others with implements connected with the transport of the statue, followed by taskmasters, with their wands of office. On



TRANSPORTATION OF A COLOSSUS BY THE ANCIENT EGYPTIANS.

the knee of the figure stands a man who claps his hands to the measured cadence of a song, to mark the time, and ensure simultaneous draught, for it is evident that in order that the whole power of the drawers might be applied at the same instant, a signal of this kind was necessary.

The height of the statue appears to have been about twenty-four feet, including the pedestal. It was of limestone, and was bound to the sledge by double ropes, which were tightened by means of long pegs inserted between them, and twisted round until completely braced, and to prevent injury from the friction of the ropes upon the stone, a compress of leather or other substance was introduced at the part where they touched the statue. In the present instance the ropes attached for moving the mass are confined to one place at the front of the statue, but in blocks of very great length certain pieces of stone were left, projecting from the sides like the trunnions of a cannon, to which several ropes were attached, each pulled by its own set of men.

We are given to understand that small blocks of stone were sent from the quarries by water to their different places of destination, either in boats or on rafts; but that those of very large dimensions were dragged by men, overland, in the manner already represented; and the immense weight of some of them shows that the Egyptians were well acquainted with mechanical powers, and the mode of applying a locomotive force with the most wonderful success. Their skill, however, was not confined to the mere moving of immense weights: their wonderful knowledge of mechanism is shown in the erection of obelisks, and in the position of large stones, raised to a considerable height, and adjusted with the utmost precision; sometimes, too, in situations where the space will not admit the introduction of the inclined plane.

Pliny, who lived about a century after the birth of Christ, describes a method of transporting obelisks from the quarries down the river, by lashing two flat-bottomed boats together side by side, which were admitted into a trench, cut from the Nile to the place where the stone lay, laden with a quantity of ballast exactly equal to the weight of the obelisk; which, so soon as they had been introduced beneath the transverse block, was all taken out; and the boats rising, as they were lightened, bore away the obelisk in lieu of their previous burthen.

However imperfect may be our knowledge of the means which the ancient Egyptians used for *transporting* the material of their buildings, we know perhaps still less of their methods of *erecting* them. Tradition had preserved to the time of Herodotus, who lived in the fifth century B.C., an account of the simple contrivance used in building the Pyramids; which contrivance may have been also followed in the construction of other edifices. The pyramid was built in receding stages, the area of each stage being less than that below it. When the first level was finished, the stones intended for the second course were lifted upon it by means of cranes, or levers, and then removed to the proper distance from the edge of the platform. In the same way, the stones intended for the third level were raised upon the first step, and from that transferred to the next above it; and so on to the top of the pyramid. The peculiar advantage of this method consists in the small height to which each stone was to be raised at once.

It seems probable, in the case of other Egyptian buildings, that banks of earth in the form of inclined planes, or some such simple contrivances, were employed, rather than more complicated mechanical powers, for raising and adjusting great weights. It was probably easier for them to raise their stones by a frame-work and earth with receding stages, than to trust the prodigious masses of their architraves and cornices to any mechanical power which they could command. It was often the practice in Egyptian buildings to fasten the stones together by clamps of various kinds, as was once observed to have been done in the buildings of Memphis.

No insight, as has been already observed, is afforded us into the secrets of the mechanical knowledge of the old inhabitants of the Nile, from the sculptures or the paintings of the tombs, though so many and such varied subjects are there introduced. Our information connected with this point, is confined to the use of levers, and a sort of crane, as mentioned by Herodotus; but it is, however, certain that the ancients did raise enormous masses, apparently with a facility unknown to the moderns. This is proved by the ingenious experiments of Archimedes, who lived in the third century before the Christian era. Some suppose that it was this philosopher who raised the site of the towns and villages of Egypt, and began those mounds of earth by means of which communication is kept up from town to town during the inundations of the Nile.

We have nothing further to add to the foregoing remarks, than the presumption, that the main part of the secret of the mechanical means of the old Egyptians consisted in their almost unlimited command of human labour. By such means as this, most of the weighty works of building in former ages were probably effected; works which still continue, as they have done throughout so many generations, to surprise and delight the traveller in these latter times.

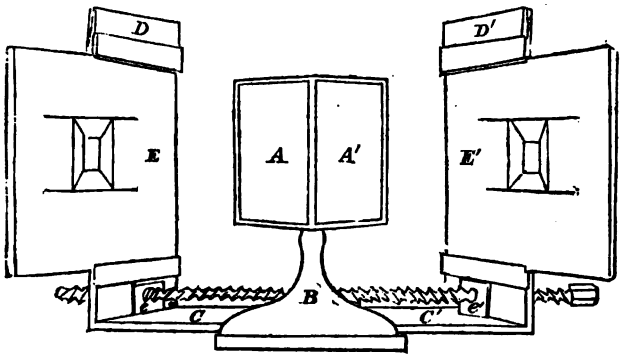
OPTICAL ILLUSIONS.

VIII.

On Binocular Vision. (*Continued.*)

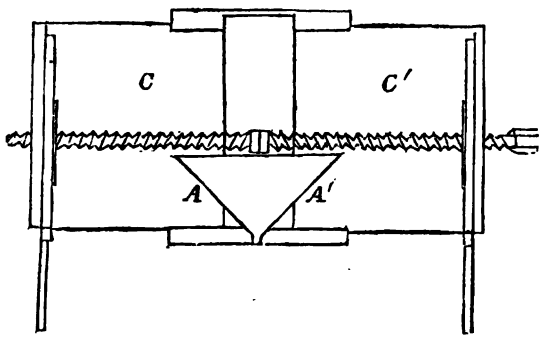
In our last paper on this subject we explained Professor Wheatstone's views of the nature of binocular vision, and the experiments by which he illustrated the truth of his opinions. We also alluded to an instrument termed the *stereoscope*, which that gentleman had constructed for the better elucidation of this curious inquiry. The construction and use of this instrument we shall now explain.

Fig. 4 (*a*).



The Stereoscope. Front view.

Fig. 4 (*b*).



The Stereoscope. Plan.

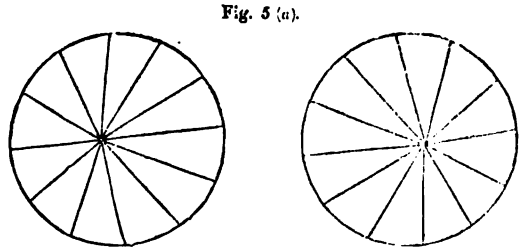
Fig. 4 (*a*) represents the front view, and fig. 4 (*b*) the plan of the instrument, the same letters of reference being used in both. A A′ are two plane mirrors, about four inches square, inserted in frames, and so adjusted that their backs form an angle of 90° with each other. These mirrors are fixed by their common edge against an upright, B, or else against the middle line of a vertical board, cut away in such a manner as to allow the eyes to be placed before the two mirrors. C C′ are two sliding boards, to which are attached the upright boards D D′, which may thus be removed to different distances from the mirrors. As it is necessary in most of the experiments that each upright board shall be at the same distance from the mirror which is opposite to it, this adjustment is effected by a right and left-handed wooden screw. The two ends of this compound screw pass through the nuts *e é*, which are fixed to the lower parts of the upright boards D D′, so that by turning the screw pin one way the two boards will approach, and by turning it the other they will recede from each other, one always preserving the same distance as the other from the middle line. E E′ are panels to which the pictures are fixed, in such a manner that their corresponding horizontal lines shall be in the same level: these panels are capable of sliding backwards and forwards in grooves on the upright boards D D′.

This being the nature of the apparatus, the mode in which Mr. Wheatstone directs it to be used is as follows: The observer must place his eyes as near as possible to the mirrors, the right eye before the right-hand mirror, and the left eye before the left-hand mirror, and he must move the sliding panels E E′ to or from him, until the two reflected images coincide at the intersection of the optic axes, and form an image of the same apparent magnitude as each of the component pictures. The pictures will coincide when the sliding panels are in a variety of different positions, and consequently when viewed under different inclinations of the optic axes, but there is only one position where the phenomena can be properly observed, and this is said by Mr. Wheatstone to be that which takes place when the optic axes converge about six or eight inches before the eyes, that is, when both eyes are directed to a point six or eight inches distant.

Now the mode in which this machine produces the required effect may be thus explained. In the sliding panel on the right is fixed a drawing representing the appearance which an object has to the right eye, and the reflecting surface of the mirror is placed at such an angle that the reflected figure appears to come from the focus or point to which both eyes are directed. By substituting the word "left" for "right," the same remark applies to the other half of the machine, and the effect is as if *both* drawings were placed at the point of convergence towards which both eyes are directed. The effect then is found to be, that the two drawings combined, one seen by one eye and the other by the other, give an image almost exactly resembling the solid object itself, with an appearance of relief, of solidity, of length, depth, and width, such as no single drawing, however, skilfully executed, could give. The two eyes, when looking at a near object, do not perceive it under exactly the same circumstances, or of the same form, and our notions of that object are derived from the combination of these two separate appearances: so in the *stereoscope*, (a term derived from two Greek words, which signify to "see a solid,") the two pictures presented by reflection to the two eyes, are not exactly alike, but by the proper focalization the combined effect of both is that of a solid body. The difference between the appearance of an object to the two eyes, or between the two drawings made in conformity thereto, is just this, that they are two different projections of the same object seen from two points of sight, the distance between which is equal to the interval between the pupils of the eyes of the observer, which interval is generally about two inches and a half.

The following are three of the arrangements which Mr. Wheatstone employed. In fig. 5 (*a*) are two cir-

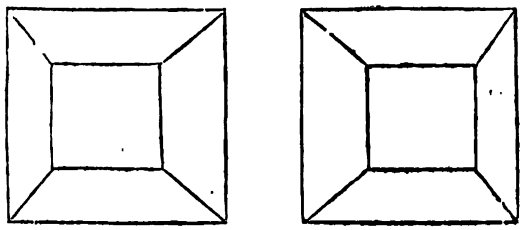
Fig. 5 (*a*).



cles, with lines drawn from the circumference to a point near, but not quite, at the centre: in one the point is nearest to the right-hand side, while in the other it is nearest to the left, and when both are placed in the stereoscope, one in the right-hand panel and one in the left, the combined image of both presents the appearance of a cone, with its axis perpendicular to the drawing, and its vertex towards the observer. The two drawings are, in fact, copies of the appearance which a small cone would present to the two eyes, with the apex towards the observer, and the effect of the instrument is to re-combine them, and produce the *relief* which the images of objects seen with two eyes are

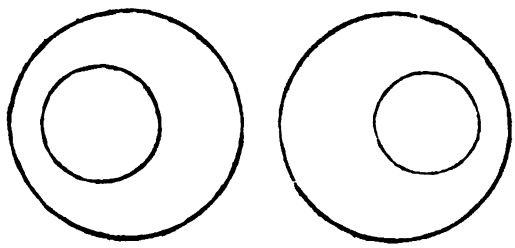
accustomed to present. In like manner the two drawings of fig. 5 (*b*) present in combination the appearance of

Fig. 5 (*b*).



the frustrum of a square pyramid, with its axis perpendicular to the picture, and its base farthest from the eye, and the two drawings in fig. 5 (*c*) give the appearance of two circles at different distances from the eyes, their centres in the same perpendicular, forming the outline of the frustrum of a cone.

Fig. 5 (*c*).



Mr. Wheatstone states, and a little consideration must show the necessity of the circumstance, that a remarkable inversion of the effect is produced when the drawing originally intended to be seen by the right eye is placed at the left hand side of the stereoscope, and that designed to be seen by the left eye is placed on its right hand side. A figure of three dimensions, as bold in relief as before, is perceived, but it has a different form from that which is seen when the drawings are in their proper places: it is in fact a converse figure. Those points which are nearest the observer in the proper figure are the most remote from him in the converse figure, and *vice versâ*, so that the figure is, as it were, inverted; but it is not an exact inversion, for the near parts of the converse figure appear smaller, and the remote parts larger, than the same parts before the inversion. Hence the drawings which, properly placed, occasion a cube to be perceived, when changed in the manner described, represent the frustrum of a square pyramid, with its base remote from the eye. In many instances of this kind, when the regular figure presents an exterior or convex appearance, the converse will present an interior or a concave.

As a means of proving whether the binocular effects were produced in the manner supposed, Mr. Wheatstone procured several pairs of little outline or skeleton solids, that is, cubes, octohedrons, &c., formed of pieces of wire; and placed each pair successively on stands before the two mirrors. The effect produced may be illustrated by that of a pair of cubes. When they were so placed that the pictures which their reflected images projected on the two retinæ were precisely the same as those which would have been projected by a cube, placed at the point of convergence of the optic axes, a cube in relief appeared before the eyes; when they were so placed that their reflected images projected exactly similar pictures on the two retinæ, all effect of relief was destroyed, and the compound appearance was that of an outline representation on a plane surface; lastly, when the cubes were so placed that the reflected image of one projected on the left retina the same picture as in the first case was projected on the right retina, and *vice versâ*, the converse figure in relief appeared.

In these experiments outline figures or models, uncoloured, were employed, in order to simplify the results; for had either shading or colouring been introduced, it might be supposed that the effect was wholly or partly due to these circumstances; whereas by leaving them out of consideration, Mr. Wheatstone distinctly saw that the entire effect of relief is owing to the simultaneous perception of the two monocular projections, one on each retina. He thinks that, "if it be required to obtain the most faithful resemblances of real objects shadowing and colouring may properly be employed to heighten the effects. Careful attention would enable an artist to draw and paint the two component pictures, so as to present to the mind of the observer, in the resultant perception, perfect identity with the object represented. Flowers, crystals, busts, vases, instruments of various kinds, &c., might thus be represented so as not to be distinguished by sight from the real objects themselves.

There is a singular confusion often presented by the geometrical figures contained in books of geometry. Whoever has paid any attention to this subject, is aware that figures of triangles, squares, circles, spheres, polygons, polyhedrons, &c., occur at every few lines in a geometrical treatise; and that such of these as pertain to solid geometry are intended to represent figures of which some of the angles, edges, or sides, are farther from the eye than others. Now it very frequently happens, that the parts which are supposed to be most distant, suddenly start up as it were into prominence, and appear nearest to the eye; and were it not that the engravers are accustomed to represent by *dotted* lines the parts most remote from the eye, this confusion would arise yet more frequently. Professor Neckar of Geneva notices this circumstance, and endeavoured to explain it by deferring it to an involuntary change in the adjustment of the eye for obtaining distinct vision. But Mr. Wheatstone attributes it to the uncertainty of the evidence presented to the eye by a mere picture, especially when entirely unaided by shadow or colour.

In one more article we shall conclude our notice of this very interesting series of experiments.

TURN on the prudent ant thy heedless eyes,
Observe her labours, sluggard! and be wise.
No stern command, no monitory voice,
Prescribes her duties or directs her choice;
Yet timely provident she hastes away,
To snatch the blessings of a plenteous day;
When fruitful Summer loads the teeming plain,
She crops the harvest, and she stores the grain.
How long shall sloth usurp thy useless hours,
Unnerve thy vigour, and enchain thy powers
While artful shades thy downy couch enclose,
And soft solicitation courts repose,
Amidst the drowsy charms of dull delight,
Year chases year with unremitted flight,
Till want now following, fraudulent and slow,
Shall spring to seize thee like an ambushed foe.—

DR. JOHNSON.

I HAVE thought the perusal of fine authors is like traversing the different regions of the earth: some glow with a pleasant and refreshing warmth, whilst others kindle with a fierce and fiery heat; in one we meet with scenes of elegance and art, where all is regular, and a thousand beautiful objects spread their colours to the eye, and regale the senses; in another, we behold nature in an unadorned majestic simplicity, scouring the plain with a tempest, sitting upon a rock, or walking upon the wings of the wind. Here we meet with a Sterne, who fans us with the softest delicacies; and there a Rousseau, who hurries us along in whirlwind and tempest. Hence that delightful succession of emotions which is felt in the bosom of sensibility. We feel the empire of genius, we imbibe the impression, and the mind resembles an enchanted mansion, which, at the touch of some superior hand, at one time brightens into beauty, and at another darkens into horror.—ROBERT HALL.

ON CHESS. XXI.

Origin of the Powers of the Pieces.

In our last article we noticed the attempt made to connect chess with two very ancient games. It is probable that a patient investigation of the subject would lead to the conclusion, that from the elements of those two games draughts was invented, and that the game represented on the Egyptian monuments (see *Sat. Mag.* vol. xviii. p. 20) was the offspring of Merelles and Petreia.

The moves of the pieces and pawns in modern chess appear so complicated, that at first view it would be thought hopeless to look to such a game as draughts for their origin. But an attentive analysis of the moves at chess reduces them to a very simple character, and it is not improbable that the moves of the pieces in a simpler and more ancient game, were similar in effect to the shortest move of the Rook together with the shortest move of the Bishop, and that these may now be taken as the type of the moves of all the pieces in the game of chess.

The Knight's move may be immediately cited as an objection to this supposition. If we bear in mind only the shortest moves of the rook and bishop, and then examine the mode by which the squares of the chess board are attached one to another, we shall see that they are connected either by an angle, which forms a path from square to square, by the contact of the diagonals,—or by a side, which forms a path from square to square between two parallels. The first of these movements belongs to the bishop; the second to the rook. Now the one of these movements seems to have been combined with the other, in order to give a move to the knight, and the combination was of the simplest kind, viz., a compound of the shortest path of the bishop with the shortest path of the rook, or *vice versâ:* hence the path of the knight is always of the same dimensions. Geometrically, the knight's leap is always the hypotenuse of a right-angle triangle, of which the base equals twice the perpendicular, the latter being equal to the side of one square*.

From the limited information that we have been able to collect on the origin of the moves at chess, we are led to suppose that, at an early period in the history of the game, the moves of some of the pieces were limited to a single square at a time; that by a subsequent privilege each player was allowed to make several moves at once before his antagonist moved; and that, in the present state of the game, whenever a move is made by certain pieces of more than one square at a time, it is to be deemed as the result of such privilege now lost and forgotten.

But this privilege is to a certain extent preserved in the Hindostanee game, at the beginning of which four or eight moves, as may be agreed upon, are played upon both sides. In this game also the two royal pawns and those of the two rooks are allowed to move two squares each at first, so long as their pieces remain at their squares. The other pawns move only one square at a time. Some of the peculiarities of the Hindostanee game are still preserved at Ströbeck. Mr. Lewis says, "The pieces being placed as usual, each party is obliged to play his king's rook's pawn, queen's rook's pawn, and queen's pawn, two squares, and the queen to her third square." After this the other pawns can move but one square.

We are not aware of the precise powers of the pieces at the time of the introduction of chess into Europe; but we have abundant evidence to prove that they were very different to those exhibited on the modern chess board. In the thirteenth and fourteenth centuries, the powers of the rook, the knight, and the pawn, were the same as at present; but many remarkable peculiarities belonged to the other pieces, which we will state at some length.

1. The Shah, Rey, or King. The Eastern name given to this piece was *Shah*, equivalent to our European word *Rey* or *King*, and it is from this piece that the game derives its name. The original movement of the rey appears to have been extremely confined, he being incapacitated from moving, except when absolutely forced to do so by an adverse check: this may in some measure be accounted for by reflecting that, as the value of the king at this game is beyond calculation (since the instant he is mated the contest is decided), they were therefore the less willing to risk his person in the field. About the commencement of the thirteenth century the rey was allowed the shortest move of the rook, and the reason why he was not allowed to move nor to take angularly seems to be found in the taste that predominated in the twelfth and thirteenth centuries of moralising almost every subject, viz., that the king ought to take everything justly and not in an oblique, *i. e.* indirect, manner. This restriction, however, was soon removed, and the rey had the power of moving and taking as well angularly as directly; but his range of action never extended beyond one square.

2. The Ferce or Queen. The name of this piece in Persian is *Pherz*, which signifies a wise and learned man, capable of giving counsel to the Shah. We have already stated that, on the introduction of chess into Europe, the word Ferce was by an easy mutation corrupted into Vierge, a virgin, and afterwards into Reyne, a queen, though the old term *Ferce* still continued to be used, and the piece retained its originally limited movements of one square at a time, and that angularly, and never directly. The substitution of a female at this game, instead of the vizier of the Orientals, has been thus ingeniously explained: "Men are soon persuaded that the picture of human life, under which they represented chess, would be very imperfect without a woman; that sex plays too important a part not to have a place in the game; and hence they changed the minister into a queen, the similarity of the words Fierge and Vierge facilitating the change." The gallantry natural to an age of chivalry and politeness, subsequently converted the Ferce from the least considerable of the chess pieces to the most powerful in the game; but this gallantry introduced that strange anomaly into the game which destroyed its military character: a pawn or foot soldier having pierced through the enemy's battalions, was rewarded for his valour by promotion to the rank of vizier, minister of state, or general; but it is absurd to make the pawn change his sex, and from a foot soldier become a queen. This point is quite sufficient to prove that the second piece at chess has been improperly named Virgin, or Queen. The ancient writers on the game, to get rid of this anomaly, endeavour to insinuate that such pawns as are made ferces, were always females; but they explain this so very awkwardly, that the point is left precisely where it is taken up. Thus, in an early MS. quoted by Mr. Lake Allen, the following lines occur in French:

Les damoiseles me vnt requis.	The damsels have requested me,
Ke lour guy ne sayt oblis.	That their game be not forgotten.
E pur lamour qe a eus ay.	And for the esteem that I bear to them
Lour guy en ceste eso't mettray.	I will here describe their game.
Seygnoures li pou' cos mest auys.	My lords the pawns, as I think,
Signefient meschines de pris.	Signify ladies of value;
Kar reynes faimes de pounes.	For pawns which become queens,
E du'kes fierces les appellomes.	Them we call Fierces;
E pur ceo damoyseles signefi'nt	And because they signify damsels,
Non pas garconnes cu' les vnes di'nt.	They are not boys as some say,
Kar si li pou' males estoyt.	For if the pawns were males,
James femeles ne deuedroyt.	They would never become females.

By means of such reasoning as this the author concludes,

E pur ceo ke ceste guy est ou pou'.	And because this is a game with
Le guy de damoiseles appellom.	Pawns,
	The game of Damsels we call it.

* This ingenious theory of the origin of the knight's move is due to Teodoro Ciccolini, Marchese di Guardagrele, whose work, "Del Cavallo degli Scacchi," appeared at Paris a few years ago.

3. THE ALFYN or BISHOP. We have already spoken of the mutations to which the phil, or elephant (the Eastern name of this piece), has been subject in Europe. It was evidently as much at variance with the character of the game for us to name this piece the Bishop, as for the French to call it the Fool.

In the thirteenth century the alfyn had the diagonal move of our bishop, restricted in its range of action to the third square from which it stood. So that, in order to capture an adverse piece, it was necessary that the alfyn should be distant from it one clear square: thus, suppose a white alfyn to be on the fourth square of his rey, he could then capture any pawn or piece standing, 1, on the adverse rey's chivalier's *third* square; 2, reyne's alfyn's *third* square; 3, his own rey's chivalier's *second* square; and 4, his reyne's alfyn's *second* square. But as he was always incapacitated from moving to a greater or less number of squares, no piece could be either captured or considered *en prise*, if situated close to it, or removed at a greater distance than the *third* square. As a compensation for so confined an action on the board, the alfyn was allowed the vaulting power of the chivalier. Thus, if a white alfyn be on his rey's fourth square, a black or white rok on the adverse reyne's fourth square, and a black poun on his reyne's alfyn's third square, the white alfyn could capture the black poun, notwithstanding the interposition of the rok. The subsequent extension of the range of action of the alfyn deprived him, in the course of time, of this vaulting motion.

4. The Asp or Horseman, Chivalier or Knight. 5. The Ruch, Ruk, Roc, or Rook, that is, the camel or dromedary. 6. The Beidak Poun, Pawn, or Foot-soldier. The powers of moving and other prerogatives of these pieces have not varied since the introduction of the game into Europe. We need only remark, that to represent the swiftest piece on the board (as the roc was at one time), by a castle, is another strange anomaly in the game.

By referring to Caxton's *Treatise on Chess*, published in 1474, we find that the powers of some of the pieces had, at that time, become remarkably changed. The king, for his first move, was allowed to leap over the pawns, and pass to any one of the five squares, viz., king's knight's third, king's bishop's third, king's third, queen's third, and queen's bishop's third. Two out of these five moves are peculiar to the knight, and the other three are not recognised in modern chess. These two knight's moves were not permitted to the queen, because "it is not fitting ne convenable thing for a woman to go to battle, for the fragility and feebleness of her." The queen's first move could be made to her third square, to her knight's third, or to the king's bishop's third. After the king and queen had each been moved once, their moves were restricted to one square at a time: the former having the shortest move of the rook, and the latter the shortest move of the bishop

The bishop had a prescribed move of two diagonal squares at once, as before noticed; one effect of this move being, as Caxton says, "that the alphin goeth in six draughts all the chequer round about, and that he cometh again into his own place."

The limited power of the king is ingeniously explained by reference to the power of the rook: "Forasmuch as the king holdeth the dignity above all other, therefore it appertaineth not that he absent himself long, ne withdraw him far by space of time from the master seat of his kingdom." The restricted power of the queen in this early state of the game is explained on the ground that "the king and queen be conjoined together by marriage, and be one thing, as one flesh and blood." It will be remembered that, at this time, the rooks were the most powerful pieces, but—

Forasmuch as they be vicars, lieutenants, or commissioners of the king, their authority is of none effect before they issue out; for as long as they be within the palace of the king, so long may they not use ne execute their commissio But anon, as they issue they may use their authority. A ye shall understand that their authority is great, for t represent the person of the king, and therefore, when t tablier is wide, they may run all the tablier. In likewi as they go through the kingdom, and they may go as w white as black, as well on the right side and left, as forwar as backwards, and as far may they run as they find th tablier void, whether it be of his adversarie's as of his ow fellowship. And when the rook is in the middle of the tablier, he may go which way he will, into four right lines on every side; and it is to wit that *he may in no wise g cornerwise*, but alway right forth. Wherefore all th subjects of the king, as well good as evil, ought to know by their moving that the authority of the vicars and commissioners ought to be very true, righteous, and just.

The powers of the knight and pawn seem to have been the same as in modern chess. When a pawn, however, arrived at the adversary's royal line, its promotion was modified by the singular powers of the queen. If the pawn reached the royal line on a black square, it then had the power of a queen placed on a black square, viz., to move on the black squares diagonally and one square at a time. If the pawn became a queen on a *white* square, then it could move only on the white diagonals one square at a time.

Our information does not allow us to trace the progress of the game from the time of Caxton, so as to shew the gradual steps by which the pieces *became* invested with their present powers. But we have said enough to show that chess, like all other human inventions, has been subject to progressive change and improvement; for notwithstanding the many anomalies in the modern game, its character is far more scientific and valuable than the game of the 13th, 14th, and 15th centuries. The powers of the pieces, as they at present exist, may be accounted for on very simple principles, if we are allowed to take the bishop and rook as types of all the rest. The diagonal move of the bishop seems to have been borrowed from the ancient game of merelles (to which draughts may also with great probability be traced), and the move of the rook may similarly owe its origin to the *πεττεια*, or game of pebbles. Now, granting this to be the case, we arrive at a very remarkable result by comparing the powers of the king, the queen, the knight, and the pawn with those of the rook and the bishop:

1. The king may make the shortest rook's move, *or* the shortest bishop's move; ***but not both at once.***

2. The queen may make an optional rook's move, *or* an optional bishop's move; ***but not both at once.***

3. The knight may make the shortest rook's move, *and* the shortest bishop's move, ***both at once.***

4. The pawn may make the shortest rook's move forward, when it does not capture; and the shortest bishop's move forward, when it does capture.

We are disposed, therefore, to think it probable that the moves of the bishop and rook were derived from some game or games more ancient than chess, and that by certain simple extensions, modifications, or combinations of the moves of these two pieces, were derived the moves of the other pieces in the game of chess.

THE Dead are like the stars by day;
Withdrawn from mortal eye,
But not extinct, they hold their way,
In glory through the sky;
Spirits from bondage thus set free,
Vanish amidst immensity,
Where human thought, like human sight,
Fails to pursue their trackless flight.

JAMES MONTGOMERY.

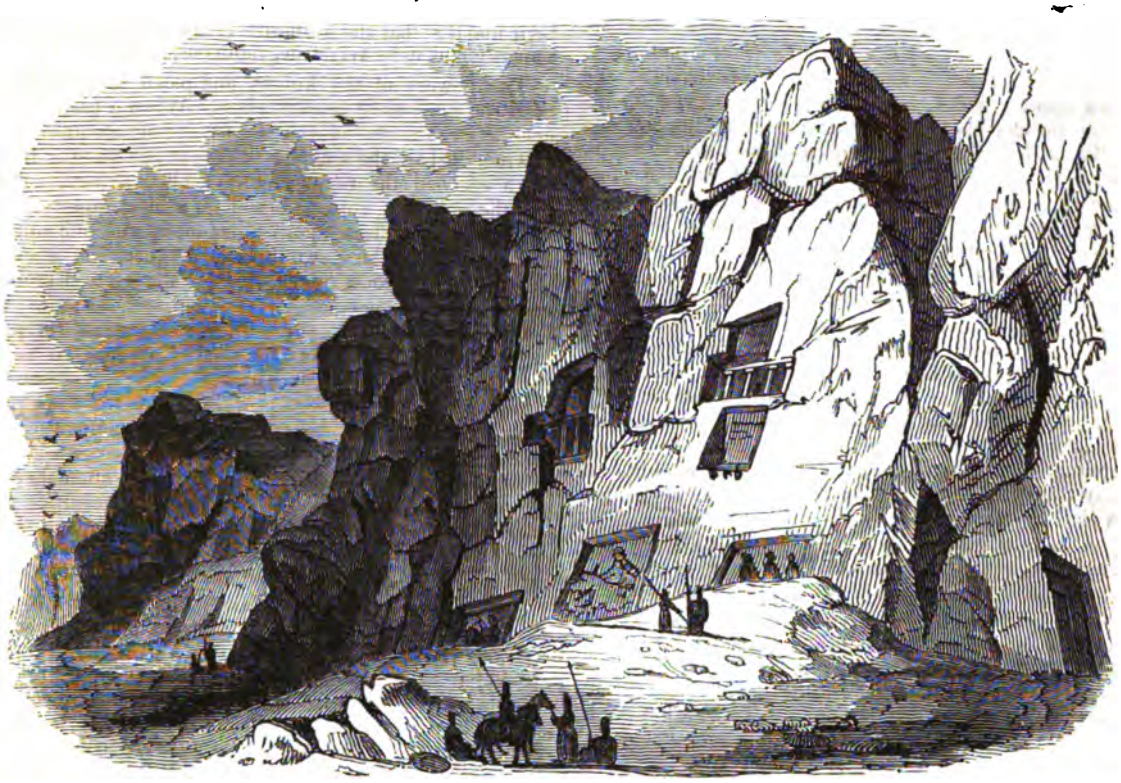
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 602. NOVEMBER 20TH, 1841. {PRICE ONE PENNY.

NAKSHI-ROUSTAM, OR THE MOUNTAIN OF SEPULCHRES.



MOUNTAIN OF SEPULCHRES.

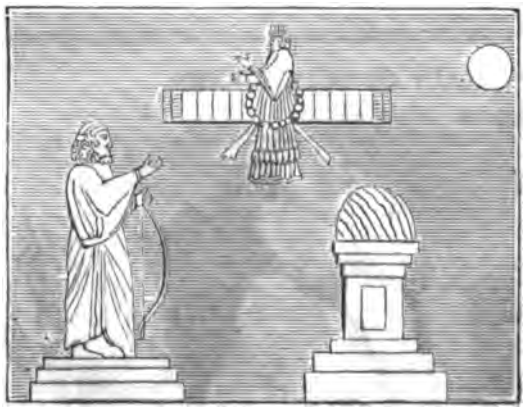
THE extensive ruins of Persepolis, together with the mention made of that city by Greek writers, are sufficient to convince us that it was one of the most important cities in ancient Persia; and yet, owing apparently to its never having been the residence of the Persian kings, we meet with little to elucidate its history, or to satisfy the curiosity which is naturally excited by its magnificent and interesting remains.

Independently of the objects of attraction presented by the site of the city itself, there is a curious specimen of the ancient grandeur of the Persians, situated to the north of Persepolis, and called NAKSHI-ROUSTAM, or the MOUNTAIN OF SEPULCHRES. This mountain abounds in sculptures and excavations, which have long excited the attention of the traveller, the artist, and the antiquary: it rises to an elevation of about three hundred yards, and is composed of a whitish kind of marble, in which the figures and excavations have been cut. At the upper part of the mountain are four excavations which seem intended for tombs. Sir Robert Ker Porter says they are "evidently of a date cœval with the splendour of Persepolis."

The external appearance of the four sepulchres is similar, and their internal structure probably presents no variety. The excavation examined by Sir Robert Ker Porter is cut about fourteen feet into the solid rock, somewhat in the form of a Greek cross: the upright division of it cannot be less than a hundred feet from end to end. The front of the tomb is ornamented with four round pilasters, distant from each other about seven feet, and as far from the caverned sides of the excavation: their bases terminate by a tor on a plinth, projecting from the face of the tomb one foot six inches: their shafts are crowned by double bulls. An additional capital (composed of three square stones piled on each other, the smallest and lowest fitting into the cavity between the bulls' necks, with the largest stone at the top) supports a plain architrave. The entrance is between the two centre pilasters: the door frame is finely proportioned, with a carved projecting architrave nicely fluted and divided into leaves: but the greater part of the apparent door is only marked to resemble one; the actual entrance being comprised within a square space of four feet six inches.

The division above the front of the tomb is an excavation containing sculptured figures, and is made to resemble a sort of framework for the purpose of inclosing them. The figures are represented with their hands raised, and supporting two beautifully friezed cornices. The drapery of these figures is a short tunic; the waists of some are bound with a simple belt, and of others with a dagger hanging therefrom on the right hip; all are bare-headed, but the bushy appearance of the hair makes it resemble a wig. These figures, together with the cornices they support, form the face of a sort of elevated platform, something like the flat table-tombs of England; but the dimensions are very different. Each side of the structure is finished by a pillar of extraordinary shape. If it be divided into four parts,—the base resembles an urn, on which rests the huge paw and limb of a lion descending from the columnar part of the pillar, which is fluted horizontally half-way up; and from

its summit there issues the head and shoulders of the unicorn-bull, but without ornaments. The back of the neck unites it with the highest cornice, which forms the top of the structure; so that the heads of the two bulls which form the pillars at each end, rise higher than the plane they support. On this plane stands the group shewn in the accompanying illustration. A figure (most



probably representing the *archimagus*, or high-priest,) is elevated on a pedestal of three steps: he is dressed in an ample robe flowing down to his ancles; his left hand grasps a strung bow; his right arm is half extended with the hand quite open; his wrists are ornamented with bracelets; his head is bare, the hair bushy behind and neatly curled; his beard falls to the breast: opposite to him rises another pedestal of three steps upon which is placed an altar, probably containing the sacred fire, a huge flame of which appears at the top. High over it to the right, is a globular figure representing the sun, of which the fire below was esteemed the offspring and the emblem. These altars always stood towards the east, so that the worshipper might face the point of the horizon whence the great source of light ascended; and we here find the orb in such a direction. Another figure floats aloft in the air, between the altar and the archimagus, appearing as if it had issued from the sun; it approaches the man from that point. This aërial personage seems supported by something like a collection of sun-beams, thickly carved in waving, horizontal, and perpendicular lines, interspersed with several divisions of narrow cloud-shaped masses of stone. The radiation is not circular, but forms three distinct collections of rays, pointing east, west, and downwards; they diverge from a ring or halo, out of the midst of which rises the figure; it being entirely above this "beamy chariot," from the waist upwards. It is dressed in a similar robe to that of the priest, with the hair and beard in the same fashion: but the head is covered with a fluted crown; the left hand holds a large and massy ring; the right is elevated and open, as if in the act of admonition; a couple of bands, apparently the ends of his girdle, flow down through the circle, and the beams in which the figure appears, thus proving the aërial texture of the seeming vehicle. "But when we compare its forms, and the workmanship of its details, and its position with regard to its occupier, with the wings and finely-wrought feathers of the bas-relief at Pasargadæ*, we can be in no doubt," says Sir Robert Ker Porter, "from the entire difference between them, that the radii we have been describing, form a means of passing through the air totally distinct from the personage that uses it."

The monumental elevation of which we are speaking, with its altar and other appendages, is comprised within a square frame of stone. On the four external surfaces at the front and the sides, our distinguished traveller found figures three deep, stationed one above the other; those to the right of the altar, and with their faces towards the back of the man on the pedestal, are clothed in robes similar to his: and they have bonnets on their wig-like hair, resembling in shape the crown on the head of the aërial being, but with this difference, that they are not fluted; these figures are armed with spears; there are three of them in a perpendicular line on the front of the western aspect of the frame; and six rank and file on the side. In the opposite direction, on that part of the frame which is to the left of the altar, in the front is a perpendicular line three deep, of figures in precisely the same sort of dress as the spearmen, excepting that they are quite unarmed. These also look towards the altar, and appear as mourners; their left hands being raised to their faces, and holding a part of their garments as if to wipe away their tears. Another line of figures is sculptured on the side of the frame, of which the mourning figures form the front; but here only one in three is in a weeping attitude.

To penetrate into the interior of the tombs was a work of no little personal danger as well as fatigue. The only means by which a stranger to these heights *could* reach them was by attaching a rope to his waist, and suffering some strong arms above to haul him upwards.

My mehmandar was at his stories and forebodings again, (says our traveller,) for tempting such dæmon-wrought places. But the peasantry of this district seemed to know better than to have fear of either deev or difficulty; and one of them more active and sinewy than the rest, managed to scramble up the perpendicular cliff, like a rat hanging by a wall; and gaining the ledge of the platform, or vestibule to the tomb, he lowered down a rope, by which some of his nimble companions assisted themselves in ascending. I followed the example by fastening the rope round my waist, and by their united exertions was speedily drawn up to the place of rendezvous. The distance was sufficiently high from the ground to give me time for thought; and during my ascent, in a manner so totally dependent on the dexterity of others, I could not but recollect the fate of half a dozen kinsmen of Darius Hystaspes, who had all perished at once in the very same expedition. Ctesias relates, that this great Persian monarch 'caused a tomb to be dug for him while he yet lived, in the double mountain; but when it was completed, the Chaldean soothsayers forbad him to enter it during his life, under a penalty of some terrible danger. Darius was intimidated; but some princes of his family could not resist a strong curiosity which impelled them to view its interior. They went to the mountain, and by their desire were to be drawn up by the priests who officiated there; but in the act, while they yet hung between earth and air, the sudden appearance of some serpents on the rock so terrified the people above, that they let go the ropes, and the princes were dashed to pieces.' On this very spot, more than two thousand years ago, the catastrophe happened. Certainly being in any noted place, has a most amazing power in bringing two far distant points of time to meet; at least in the mind that contemplates them. I should have read the history of this disaster at home with almost as little concern as if the people had never existed; here I was on the spot where it happened, and the scene was realized; the persons seemed present with me, and I shuddered for them, while I rejoiced in my own safety. To incur the least possible danger to myself and my assistants, I had selected the tomb that was nearest the ground; but even that was upwards of sixty feet above its level; and I came off with not a few bruises, from hard knocks against the rock, in my swinging ascent.

After this perilous ascent our traveller made his way through a low and narrow entrance into a vaulted chamber, completely blackened all over by smoke of some kind, either from lamps or other fires: the place was stifling and gloomy; at its farther extremity were three arched recesses: each contained a trough-like cavity cut down into the rock, and covered with a stone of corresponding dimensions. Every one of these covers had been broken near the corners, evidently to give a view of the contents of the sarcophagus. A light was introduced into the recesses, by which the remotest cranny was seen, and all were found to be alike empty: not even any loose dust was present that might have formerly

* See the account of a remarkable Persian idol, in No. 514 of the *Saturday Magazine*.

belonged to some mouldered inhabitant. If these covers were at any time ever removed, they must have been very carefully replaced. The open space of the chamber between the catacombs and the door is about five feet; the entrance had been originally closed by a block or blocks of stone, the deep holes being visible on each side which received their pivots:—

I observed, (says our traveller,) some vestiges within, of the mode of hanging so ponderous a security; but the avidity of the spoilers for lead and iron has injured every part where the objects of their cupidity could be rent away. The surface of the door, as it appears without, is divided into four compartments; the lower one is entirely taken away, being now quite open to the air, with a small part also of the second division broken off, which probably happened when the passage was forced. When we look on these violences, committed on the last resting-places of the great, we cannot but be sensible that the humblest graves are the securest.

Every charity school for the instruction of the poor in the principles of our Church, and for their discipline in habits of industry and godliness, is to be considered as one of the bulwarks of our country; as a fortress, which it would be madness not to keep in repair; as a monument of the zeal and piety of our forefathers, which cannot, without sacrilegious neglect, be suffered to decay.—Le Bas.

WHAT IS HONEY-DEW?

In the summer months, when the weather is hot and dry, the foliage of trees and plants is often found covered with and rendered glossy by a sweet clammy substance known to persons resident in the country by the name of *honey-dew;* they regard it as a sweet substance falling from the atmosphere. The production of this substance has led to as many conjectures as that of Blight, notic d in a former article. Dr. Mason Good says:—

I have seen a hop-ground completely over-run and desolated by the *Aphis humuli*, or hop green-louse, within twelve hours after a honey-dew (which is a peculiar haze or mist loaded with poisonous miasm) has slowly swept through the plantation, and stimulated the leaves of the hop to the morbid secretion of a saccharine and viscid juice, which, while it destroys the young shoots by exhaustion, renders them a favourite resort for this insect, and a cherishing nidus for myriads of little dots that are its eggs. The latter are hatched within eight and forty hours after their deposit, and succeeded by hosts of other insects of the same kind.

It has often happened to writers on natural history, that, while they successfully oppose those prejudices of opinion or vulgar errors which, from being constantly admitted without dispute, have obtained the strong hold of habit on the mind, yet fall into other prejudices, namely, those of sense or personal observation, and thus explode one error by the introduction of another which is more dangerous than the first because it receives the support of a learned man. Sir John Herschel says:—

Our resistance against the destruction of the other class of prejudices, those of sense, is commonly more violent at first, but less persistent, than in the case of those of opinion. Not to trust the evidence of our senses, seems, indeed, a hard condition, and one which, if proposed, none would comply with. But it is not the direct evidence of our senses that we are in any case called upon to reject, but only the erroneous judgments we unconsciously form from them, and this only when they can be shown to be so *by counter-evidence of the same sort;* when one sense is brought to testify against another, for instance, or the same sense against itself, and the obvious conclusions in the two cases disagree, so as to compel us to acknowledge that one or other must be wrong.

The short extract we have given from Dr. Good, contains several prejudices both of opinion and of sense. The entomologist is peculiarly liable to error, not only from the minuteness of the objects observed, but from the difficulty which often exists of distinguishing between a cause and an effect. The following details will enable the reader to trace to their source the errors contained in the quotation, and to furnish an answer to the question, "What is honey-dew?"

During summer, if we examine almost any species of plant, an immense number of small insects will be found placed side by side, in large masses, upon the stalks and leaves. These insects are called APHIDES, *pucerons*, or *plant-lice*. The history of these little animals has been written with great care by some of the most celebrated naturalists; and many truly remarkable details have been supplied, which are too well authenticated to admit of dispute. But as the nature of these details renders them unfit for our pages, we pass on to the more immediate subject of the present article.

The aphides on the leaves or stems of trees appear to be in a state of total inaction; but they are in fact busily occupied in extracting the juices of the plant with their proboscis. Their punctures frequently cause sensible alterations and damage to the leaves, and even to the stems of trees, which become bent and contorted on the side attacked by the insects.

The curvings thus effected, (says Mr. Rennie,) become very advantageous to the insects, for the leaves, sprouting from the twig, which naturally grow at a distance from each other, are brought close together in a bunch, forming a kind of nosegay, that conceals all the contour of the sprig, as well as the insects which are embowered under it, protecting them against the rain and the sun, and at the same time hiding them from observation. It is only requisite, however, wherever they have formed bowers of this description, to raise the leaves, in order to see the little colony of the aphides, or the remains of those habitations which they have abandoned. We have sometimes observed sprigs of the lime tree, of a thumb's thickness, portions of which resembled spiral screws, but we could not certainly have assigned the true cause for this twisting, had we not been acquainted with the manner in which aphides contort the young shoots of this tree.

The leaves of gooseberry, currant bushes, apple trees, &c., are often seen covered with tuberosities; and on examining the under side of the leaf, a crowd of small insects will be seen feeding on the juices of the leaf and shielded from the weather and many of their enemies. On the leaves of the elm, the aphides produce vesicles, or hollow galls of about the size of a walnut and sometimes larger, within which a whole colony resides and the female deposits her eggs.

Most of the aphides are covered more or less with a cotton-like down. In those which infest the plum-tree and the cabbage this covering resembles flour. Those which live in the vesicles of the elm are entirely covered with this substance. In the aphides of the poplar it is in the form of cotton threads; but it exists in largest quantity on the aphides of the beech tree, on which species the threads are sometimes an inch in length; they are but slightly attached, and may easily be removed.

Were it not that the aphides are frequently exposed to the attacks of powerful enemies, it is probable that they would multiply to such an extent as totally to destroy the plants whose juices they suck. The various species of lady-birds, both in the larva and perfect state, feed entirely on aphides. They place their eggs on a leaf where aphides abound, and when the young are hatched they find themselves surrounded by their prey. The larvæ of many species of two-winged flies (*Syrphidæ*) also commit great havoc among the aphides. Mr. Kirby, in speaking of one of these larvæ, says:—

When disposed to feed he fixes himself by his tail, and being blind, gropes about on every side, as the Cyclops did for Ulysses and his companions, till he touches one, which he immediately transfixes with his trident, elevates into the air, that he may not be disturbed with its struggles, and soon devours. The havoc which these grubs make amongst the aphides is astonishing.

The larvæ of the lace-winged flies are such enemies to the aphides, that Reaumur called them "the lions of the aphides." The horticulturist removes large numbers of these destroyers of vegetables by means of a moistened

brush, or by burning sulphur or tobacco and conducting the vapours or the smoke by means of a bellows or a funnel to the parts affected.

So vast and so rapid is the increase of aphides, and so constantly are they engaged in sucking the juices of plants, that the reader need not be startled with the assurance that these little insects are the sole cause of the honey-dew which is often found so abundantly on the foliage of plants during summer. This fact is now established by the repeated observations of eminent naturalists; but for the sake of brevity, we propose to follow the details of Mr. Curtis on this curious subject.

Were a person accidentally to take up a book in which it was gravely asserted that in some countries there were animals that ejected from their bodies liquid sugar, he would soon lay it down, regarding it as a fabulous tale calculated to impose on the credulity of the ignorant; and yet such is literally the truth. The superior size of the *Aphis salicis* will enable the most common observer to satisfy himself on this head. On looking steadfastly for a few minutes on a group of these insects, while feeding on the bark of the willow, one perceives a few of them elevate their bodies, and a transparent substance is evidently ejected from the two horns which the aphides have at the hinder part of the body: this is immediately followed by a similar motion and discharge, like a small shower, from a great number of others.

On placing a piece of writing paper under a mass of these insects, it soon became thickly spotted. Holding it a longer time the spots united, from the addition of others, and the whole surface assumed a glossy appearance. I tasted this substance, and found it as sweet as sugar. I had the less hesitation in doing this, as I had observed that wasps, flies, ants, and insects without number, devoured it as quickly as it was produced: but were it not for these it might no doubt be collected in considerable quantities, and if subjected to the processes used with other saccharine juices, might be converted into the choicest sugar or sugar-candy.—CURTIS.

The aphides produce this substance in so large a quantity that the vesicles of the elm and the tuberosities of the gooseberry and currant-bushes often contain globules as large as a pea. It is at first limpid and transparent, but becomes thick by exposure to the air.

The origin of honey-dew is now completely established; but as the notion that this substance is formed in the atmosphere is still a favourite mode of accounting for its production, we will say a few words on the subject: and we may also notice another opinion, that honey-dew is an exudation from the plant itself.

If honey-dew fell from the atmosphere it would cover everything indiscriminately: whereas it is never found except on certain living trees and plants. It is also found on plants confined within hot-houses and green-houses. It is found more abundantly on healthy than on sickly trees, because the aphides select only the youngest and most healthy shoots. If the honey-dew exuded from the plant, it would present certain general and uniform appearances on all the leaves; but its appearance is very irregular, not being alike on any two leaves, some leaves having none of it, and others being only partially covered. Mr. Murray, who ascribes honey-dew to an electric change in the air, opposes the now received opinion of its production by aphides, on the ground that the substance "was very abundant on those plants that were entirely free from aphides;" but these little insects are very likely to escape notice unless we look in the right place: they are careful to eject the honey-dew to a distance from where they may be feeding. The source of the honey-dew on certain leaves must often be looked for in the leaves above, in the under surfaces of which myriads of aphides may lie hid. If anything should intervene between the aphides and the leaf next between them, there will be no honey-dew on that leaf.

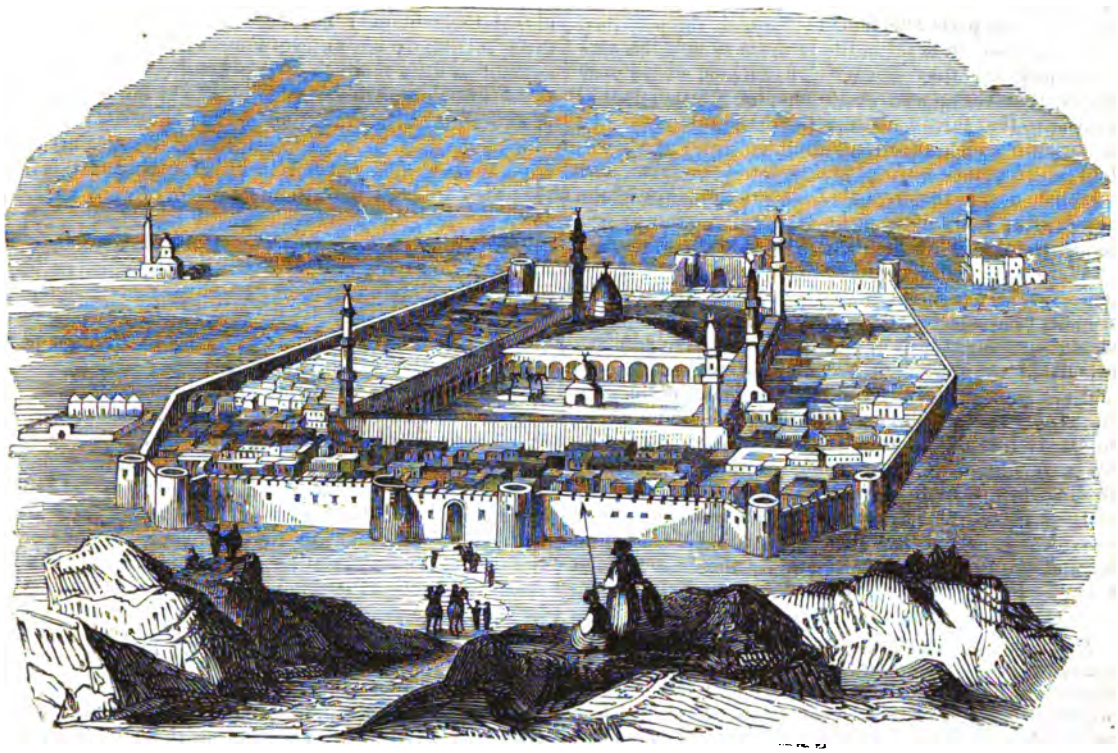
Mr. Curtis has noticed, that where the saccharine substance has dropped from the aphides for a length of time, as from the Aphis salicis in particular, it gives to the surface of the bark, foliage, or whatever it ha dropped on, that sooty kind of appearance which arises from the explosion of gunpowder, which greatly disfigures the foliage, &c., of plants. It is often mistaken for a kind of black mildew, which it greatly resembles.

A BLIGHTED BRANCH.

TRULY it is difficult, in passing along the countries of which I am speaking (the neighbourhood of the Rhone), if we will but use our eyes at all, not to be forced to confess the irresistible and abundantly sufficient power of the agencies in daily operation to explain the dissolution which everything on the earth is undergoing. This progress may indeed be called slow in comparison to the quick march of our petty span of life; but the wear and tear of the mountains, and their final extinction, is no less a matter of physical fact than our own mortality is. It cannot, indeed, be denied that the Alps and Andes are longer-lived than we,—but even their age,—that of the hoariest-headed peak among them, Mont Blanc or Chimborazo, or the blushing Monte Rosa,—is really but an instant of time—a mere fraction—an infinitesimal moment—a single beat of the great clock of time, to say nothing of eternity! It is just the same when we come to speak of distances, since our longest stretch on earth, "from China to Peru," from "Indus to the Pole," or even our longest measurable spaces in the heavens, the aphelion of our most eccentric comet, lying millions of millions of miles beyond the orbit of Uranus,—what are they but insignificant portions of space, mere hair-breadths in the vast scale of even the visible or conceivable parts of astronomy?

To some minds these speculations, or, to speak more properly, these absolute certainties, are sources of pain and bewilderment rather than of pleasure. But it appears to me that, if well conducted, they are adapted to do good, by rendering us more contented with our lot, and more earnest in the performance of our duty, by filling our lives with more lofty and more cheerful objects of pursuit. It is surely a delightful reflection, and one filled with the brightest hopes, that, insignificant as we are, we are still capable of seeing and understanding so much of these things, and that we are permitted to reason upon them to a great extent, though we can see neither their beginning nor their end, nor can we interrogate their purpose. When rightly employed such speculations give, if anything on earth can, a foretaste of immortality, and tell, both to the reason and to the imagination, that the soul is not perishable: and thus, all such pursuits as geology and astronomy, properly carried on, do essentially contribute to fortify our faith in Revelation, by inculcating, or as it were enforcing the grand doctrine of dependence, and making us feel, at every turn, how powerless we are, and how powerful is our Maker, and yet how beneficent, and, above all, how uniform and how admirably consistent in all his operations.—CAPTAIN BASIL HALL.

TURKEY AND THE TURKISH PROVINCES.



MEDINA, THE BURIAL-PLACE OF MOHAMMED

HAVING already given a brief account of Mecca, we proceed to offer a similar notice of Medina, which is also one of the holy places of the Mohammedans. It may be well to glance at the geographical position of Medina, with respect to surrounding places.

In following the course of the Mediterranean from west to east, our progress is finally arrested by the coast of Syria, which forms its eastern termination; and at the southern corner of this coast, forming the south-eastern extremity or corner of the Mediterranean, we meet with a spot which is a boundary between Syria, Arabia, and Egypt, and also an isthmus of separation between the Mediterranean and Red Seas. From this isthmus the Red Sea extends, nearly in a south-eastern direction, for a distance of two thousand miles, till it joins the Indian Ocean. The coast then trends round towards the north-east, till we arrive at the entrance of the Persian Gulf, up which we ascend nearly in a parallel direction to the Red Sea. Now all the immense country bounded by these coasts,—the Red Sea on the west, the Indian Ocean on the south, and the Persian Gulf on the east, comprising an extent of territory more than three times as large as that of France,—is known by the general name of Arabia.

It is towards the western coast of this large peninsula that we must look for the city of Medina. It lies at a few days' journey from the coast (estimated, as "days' journeys" are in the East, by the rate of a camel's progress,) at about one third of the length of the Red Sea from its upper end, that is, about twice as far from the Straits of Bab-el-Mandeb on the south, as from the Isthmus of Suez on the north. On the western shore of the Red Sea, opposite Medina, we meet with the sandy desert which separates that sea from the fertile valley of the Nile; and eastward of Medina, we likewise meet with sandy deserts, so that were it not for the intervention of the Red Sea, the town would seem to be in the heart of a desert. We now proceed to speak of the town itself, and its inhabitants.

Medina (the ancient *Yathreb*), although the place of burial of the prophet Mohammed, is neither so celebrated as Mecca, nor is it considered so much an act of duty to make pilgrimages thither. A considerable number, however, of those who have gone through all the ceremonies and observances at Mecca which are necessary for their attainment of the title of hajjis, usually join the Syrian caravan, or form themselves into small detachments, in order to visit the tomb of their prophet. The distance between these two cities is about two hundred and seventy miles; and the time occupied by the journey is ten or eleven days, during which the pilgrims must be content to undergo many inconveniences and dangers; there being no public khan or place of accommodation for travellers through the whole route, and the depredations of Arab robbers being frequent and daring.

The city of Medina is situated on the edge of the Great Arabian Desert. A circle of twelve miles round the place was originally considered as holy ground, in accordance with the strict injunctions of Mohammed himself; but this precept is forgotten or entirely unobserved. The town is tolerably well built; the houses are for the most part two stories high, and entirely of stone. The principal streets are paved; but the rest are poor and narrow, only measuring two or three paces across. The city is surrounded by a wall, and on a small rocky elevation stands the castle, inclosed by a thick stone rampart, between thirty-five and forty feet high, flanked by towers, and defended by a ditch.

Unlike Mecca, the city of Medina is well supplied with water by means of wells and subterraneous canals, which are scattered throughout its extent; and in consequence it is not so entirely bereft of vegetation, or so dependant on other places for its supplies, as the former city. The suburbs extend to the south and west, and occupy a larger space of ground than the city itself, from which they are separated by an open space containing gardens, markets, and a few huts. There are very few public edifices at Medina; and for such as there are, the city is indebted to the Sultans of Egypt and Constantinople.

The inhabitants of Medina are a mixed race, the

greater part of whom derive their origin from foreigners who have been induced to settle in the city, with the hope of acquiring gain, in their traffic with the pilgrims. In the course of a few generations these settlers become Arabs in feature and character. They live in a very poor style, and display much gravity and circumspection in their outward deportment; but they are not more free from vice and immorality than the inhabitants of Mecca; indeed it is notorious that the Mohammedans of these two cities, where we might expect to see the influence of the better part of their religion especially predominant, are more depraved and immoral than those of any other city or country in the world.

The mosque which contains the tomb of Mohammed, and which is the principal means of support of the inhabitants of Medina, is situated towards the eastern extremity of the town. It bears some resemblance to the Temple of Mecca, being an open square, divided by a partition into two compartments, and surrounded on all sides by covered arcades; its dimensions, however, are considerably less, being 165 paces in length, and 130 in breadth. This mosque was greatly improved by the Caliphs, who bestowed on it many generous donations; and after its complete destruction by a fire, occasioned by lightning, when nothing remained but the tomb of the prophet, the restoration of the mosque was undertaken by the Sultan of Egypt, who erected it in its present form, in the year of our Lord 1487. There are five minarets, and four gates to this mosque: the principal entrance is extremely handsome; the sides of the gate being inlaid with marble and glazed tiles of various colours, which give it a dazzling appearance. At this gate the hajjis are obliged to enter when they first arrive at this city of the prophet, and at a fountain immediately in front of it, they are expected to perform their ablutions, ere they advance into the sacred area. In the northern division of the square stands a small building, in which are deposited lamps for the use of the mosque. The situation of the famous sepulchre of the prophet, is indicated in our engraving by the cupola, which surmounts the roof of the mosque, near one of the minarets. To preserve this venerated tomb from the too near approach of the devotees, it is surrounded by an inclosure called *El Hejra*, consisting of many columns supporting an arched roof; and these again are encircled by an iron railing thirty feet high, of so close a texture and so thickly interwoven with inscriptions, as effectually to hide the interior. There are several small windows in this iron screen, and at the principal of these the pilgrims offer their devotions. The glimpse which is obtained of the space inclosed by the railing, merely informs the worshipper that a rich curtain is carried round on all sides, resembling that of a bed, and that it is of the same height as the railing itself. The curtain or veil is of silk brocade of various colours, interwoven with silver flowers, and having a band of inscriptions in gold characters, running across the middle, like that of the covering of the Kaaba. Within this curtain no persons are allowed to enter, except those whose peculiar privilege it is to take care of the tomb, and to put on the fresh curtain on the accession of a new Sultan to the throne of Constantinople; for, as in the case of Mecca the splendid covering of the interior of the walls of the Kaaba is provided by the new Sultan, so here, the curtain for the prophet's tomb is received as a donation from the same hand. The remnants of this sacred brocade are sent back to Constantinople, and are used as a covering to the tombs of the sovereigns and princes there.

It is not the tomb of Mohammed alone, which occupies the space within this double inclosure; for there also are deposited the remains of his two friends, Abu Beker and Omar. The three tombs are said to be of plain mason work, covered with precious stuffs; but the accounts of different authors vary considerably as to their form and position. Lamps are suspended all around the curtain and are kept burning during the night; their number has been extravagantly stated at three thousand; but an eye-witness has declared them to amount to little more than one hundred. The story of the suspension of the prophet's coffin in the air by means of two powerful magnets, appears to have been an invention of the Greeks and Latins. The Moslems are so far from acknowledging themselves the authors of this fable, that they smile at the credulity of foreigners, at having for a moment given credence to the tale.

The visit to the mosque and tomb of Medina is not obligatory on "the faithful;" yet it is thought to be an act highly pleasing to the Almighty, and expiatory of many sins, while it entitles the pilgrim to claim *as a right*, the patronage of the prophet in heaven. So anxious are the inhabitants of Medina to confer importance on their city and on the tomb of their prophet, that they declare one prayer said within sight of the Hejra to be as efficacious as a thousand said in any other place except Mecca; and that whoever repeats forty prayers in this mosque will be saved from the pains of hell-fire after death. These assertions are calculated to attract numbers of poor misguided devotees, who, ignorant of the true and only expiation for sin, or unable clearly to discern it through the cloud of traditions imposed on them by their false prophet, are eagerly seeking to atone for the sins of their past lives, by a toilsome and dangerous pilgrimage, and an empty round of observances, which are little calculated to give peace to the conscience or satisfaction to the mind. Medina is reported to have been the depository of immense treasures in former days; but these accounts are probably much exaggerated; and though in the sanctuary of this mosque the precious things of Hejaz were certainly kept at one time, and formed no doubt a collection of great value, yet we are not to believe implicitly the stories of its vastness and immense extent. Notwithstanding the splendid exterior of the mosque, and the gay colours with which it is decorated, there is no appearance of real riches there at the present day.

It will bear no comparison (says Burckhardt) with the shrine of the most insignificant Catholic saint in Europe, and may serve as a convincing proof, that, whatever may be their superstition and fanaticism, the Moslems are not disposed to make the same pecuniary sacrifices to their religious foundations, as the Popish, or even the Protestant Christians do for theirs.

Medina is, or was lately, under the government and authority of a Turkish commander, who takes the management of the pecuniary affairs of the mosque, and of all other ecclesiastical matters. Next to him in importance is the Cadi; and many of the native Sheiks are held in great respect.

To have no assistance from other minds in resolving doubts, in appeasing scruples, in balancing deliberations, is a very wretched destitution.—DR. JOHNSON.

LINES BY DR. SOUTHEY ON HIS LIBRARY.

My days among the dead are passed,
Around me I behold
Where'er these casual eyes are cast,
The mighty minds of old;
My never-failing friends are they
With whom I commune day by day
With them I take delight in weal,
And seek relief in woe:
And while I understand and feel
How much to them I owe,
My cheeks have often been bedew'd
With tears of thoughtful gratitude,
And from their lessons seek and find
Instruction with an humble mind

OLD ENGLISH NAVIGATORS.

Willoughby, Chancelor, and Burroughs. I.

It is our intention to devote the present and one other paper to the lives of the naval commanders whose names are given above, because they may be called the friends and disciples of the illustrious Cabot, and because their labours were, for the most part, exerted jointly in the prosecution of a very memorable polar voyage.

Sebastian Cabot, as we have already observed (p. 12), was driven to the necessity of soliciting employment from the court of Spain, in consequence of the temporary abandonment of maritime enterprise on the part of the English. It so happened, however, in the year 1553, in the reign of Edward the Sixth, that the merchants of London projected a voyage, having in view to reach, by way of the north and north-east, the opulent and celebrated regions of India and China, and that Cabot was now in London again, having been created grand pilot of England, and constituted "governour of the mysterie and companie of the marchants adventurers for the discoverie of regions, dominions, islands, and places unknowen." The merchants, having consulted with Cabot, resolved upon the expedition, and an association was formed, by which the undertaking was carried on in shares of 25*l.*, so that the sum of 6000*l.* was soon raised, which was expended in the construction and equipment of three vessels fitted for northern and tropical navigation. The youthful monarch favoured the design, and lent his countenance to the undertaking.

As the promoters of this expedition had no doubt of its success, and made sure of reaching the Indian seas by way of the pole, they omitted none of those precautions which were deemed necessary for the safety of vessels navigating the tropical seas,—hence they caused the ships to be sheathed with lead, thinly laid on, in order to defend them from the worms that were found to be destructive to wooden sheathing in warm climates. This is the first account we have of ships coated in England with a metallic substance, though the practice had been long familiar to the Spaniards.

The ships being provisioned for eighteen months, Sir Hugh Willoughby was appointed captain-general of the expedition; Richard Chancelor was made pilot-major of the fleet, and nominated to the command of the "Edward Bonadventure;" and Stephen Burroughs acted as master of Chancelor's vessel.

It was probably owing to his advanced age that Cabot himself did not accompany the expedition, but he drew out a series of instructions, in which the whole conduct to be observed by the officers and crew is carefully laid down. We will here give a slight sketch of these rules, which, though generally good and useful, are not, as the reader will see, perfectly unexceptionable.

Strict attention is enjoined to private conduct and morals: prayers are directed to be read morning and evening on board each ship, either by the chaplain or master, and no "ribaldry or ungodly talk, dicing, carding, tabling, nor other devilish games," are permitted.

All acts tending to a breach of discipline are prohibited, "conspiracies, part-takings, factions, false tales, which be the very seeds and fruits of contention."

The steering of the ship was to be regulated by a council of twelve, the captain having only a double vote. A daily record of the course of navigation was ordered to be taken, together with celestial observations, the aspect of the lands along which they sailed, and any other interesting occurrence. The masters of the different ships were to meet weekly, compare these records, and enter the result into a common ledger.

Various regulations are drawn up for keeping weekly accounts, maintaining the cook-room, and other parts of the ship clean, and preventing any liquor from being spilled upon them.

The mariners were directed to treat the natives of the countries which they visited with consideration, gentleness, and courtesy; and without any disdain, laughing, or contempt. All fair means were to be used for alluring them on board, where they were to be well-treated and clothed, in order to attract others:—it was intimated that it would be well to intoxicate them, in order to get at their secrets. They were to use great circumspection in their dealings with strangers; and, if invited to dine with any lord or ruler, to go well-armed, and in a posture of defence.

The sailors' uniforms were to be worn only on particular occasions, when it was desirable to show them off "in good array for the advancement and honour of the voyage." They are warned not to be alarmed when they saw the natives of any place dressed in lions' and bears' skins, with long bows and arrows, as this formidable appearance was often assumed merely to inspire terror. The shark and the alligator were probably alluded to, when the sailors were told that there were persons armed with bows, who swam naked, in various seas, havens, and rivers, "desirous of the bodies of men, which they covet for meat," and against whom it was necessary to keep diligent watch night and day.

The principal recommendations for the election of Sir Hugh Willoughby to the supreme direction of the enterprise, seem to have consisted in his high birth, his tall and handsome person, his valour and skill in war, and his heroic disposition: these qualities seem to have been regarded over and above nautical experience, which essential requisite is not even mentioned.

When the ships lay at Greenwich, where the court at that time resided, the mariners received every mark of royal favour, which could cheer and encourage men embarking on a dangerous and important enterprise. King Edward addressed a circular letter to all "kings, princes, rulers, judges, and governors of the earth;"—he spoke of the benefits of universal friendship;—the duty of showing kindness to strangers, and particularly to merchants;—he desired free passage for Sir Hugh Willoughby and the others with him, promising to make a suitable return, whenever the occasion of foreigners visiting England might occur. The ships set sail from Greenwich on the 10th of May, in order to have some fine summer weather before them. The king himself was confined by illness at this time; but the principal courtiers stood at the palace-windows, the rest of the household mounted the towers, while the people in crowds lined the shore. The ships fired their guns, causing the hills and valleys to resound; and "the mariners shouted in such sort that the sky rung with the noise thereof. In short, it was a very triumph."

After stopping a few days at Blackwall, the expedition sailed down to Woolwich and Gravesend, and thence to the coast of Essex, where contrary winds unfortunately detained them till the 23rd. Then, with a favouring gale, they quitted England, and directed their course into the expanse of the German Ocean. Their commander was desirous of touching at the coast of Scotland; but this was rendered impossible by contrary winds, which obliged him also to make frequent changes of course, "traversing and tracing the seas." On the 14th of July they got among the islands which fringe the coast of Norway, and at length arrived at the larger range of the Loffoden Isles, whence they sailed to the large island of Senjan, where, finding themselves ignorant of the relative situations of the islands and the coast, they endeavoured in vain to procure a pilot. As they approached the northern cape of Europe, Sir Hugh assembled the commanders and exhorted them to keep close together; but in case of separation, he appointed a rendezvous at Wardhuys, understood to be the principal port of Finmark. The weather soon became rough in the extreme; and, being obliged to stand out to sea, amid the thick mist of a stormy night, the vessels of Willoughby and Chancelor separated, and never again met.

According to the account of Clement Adams, who was with Chancelor, it appears that, as they were driving before the gale, the admiral loudly and earnestly called upon them to keep close to him; but that he himself carried so much sail, and his vessel was so superior, that Chancelor could not possibly obey the order. The other ship was called the "Bona Confidentia," with which the commander continued his voyage; but was astonished and bewildered at not discovering any symptom of land; whence it appeared that "the land lay not as the globe made mention." The maps of those days were, as we may naturally suppose, exceedingly imperfect; so that, after sailing about in various directions for very many days, towards the pole,—eastward and westward,—and then looking for land towards the south, and having in vain attempted to land at Nova Zembla, they proceeded upon a new tack, and at length saw the coast of Russian Lapland. Here they must have been very near the opening into the White Sea, into which had they entered, they might have reached Archangel, and spent the winter in comfort and security with Chancelor and the others, who had reached that place in safety, as we shall relate in our next article. Unfortunately, however, instead of keeping southward when out at the mouth of Waranger Fiord (or gulf), they sailed away again to the west, in the hope probably of reaching Wardhuys, which they missed, and which was the only point in those immense seas of which they had any distinct knowledge. The coast was naked, uninhabited, and destitute of shelter, except at one point, where they found a shore bold and rocky, but with some good harbours. Here, though it was only the middle of September, they began to feel the premature rigours of a northern season; intense frost, snow, and ice, driving through the air as though it had been the depth of winter. On these desolate shores, therefore, they settled down to wait for the ensuing spring; while rein-deer, foxes, Polar bears, and "divers beasts to them unknown, and therefore wonderful," haunted their settlement, as if surprised by the novelty of the fresh tenants of the soil.

Nothing more was heard of Sir Hugh Willoughby and his brave associates, until, a long time after, tidings reached England, that some Russian sailors, as they wandered along these dreary boundaries the year after, had been astonished by the view of two large ships, which they entered, and found the crews all lifeless, to the number of about seventy persons, whom they judged to have perished from cold and hunger. The remains of the unhappy sufferers were found on a barren and uninhabited part of the eastern coast of Lapland, at the mouth of a river called Arzina, not far from the harbour of Kegor. From papers found in the admiral's ship, and especially by the date of his will, it appeared that most of the company of the two ships were alive in January, 1554. They had entered the river on the 18th of September preceding. The journal of Sir Hugh Willoughby contains the following reference to their distressed situation:—

Thus remaining in this haven the space of a weeke, seeing the yeere farre spent, and also very evil wether, as frost, snowe, and haile, as though it had been the deepe of winter, we thought it best to winter there. Wherefore we sent out three men south-south-west, to search if they could find people; who went three dayes journey, but could find none. After that we sent out other three westward, four dayes journey, which also returned without finding any people. Then sent we three men south-east, three dayes journey, who in like sorte returned without finding of people or any similitude of habitation.

The unhappy fate of Willoughby and these early English navigators is thus finely, but pathetically, alluded to by Thomson:—

Miserable they
Who here entangled in the gathering ice
Take their last look of the descending sun;
While, full of death, and fierce with tenfold frost,
The long long night, incumbent o'er their heads,
Falls horrible. Such was the Briton's fate,
As with first prow, (what have not Britons dared!)
He for the passage sought, attempted since
So much in vain, and seeming to be shut
By jealous Nature with eternal bars.
In these fell regions, in Arzina caught,
And to the stony deep his idle ship
Immediate sealed, he with his hapless crew
Each full exerted at his several task,
Froze into statues; to the cordage glued
The sailor, and the pilot to the helm.

In our next paper we shall pursue the adventures of Chancelor and Burroughs, after their parting from Willoughby

---

THE LIBRARY.—Heinsius, keeper of the library at Leyden, was mewed up in it all the year long; and that which to thy thinking should have bred a loathing caused in him a greater liking. "I no sooner," saith he, "come into the library, but I bolt the door to me, excluding lust, ambition, avarice, and all such vices, whose nurse is Idleness, and their mother Ignorance, and in the very lap of eternity, amongst so many divine souls, I take my seat with so lofty a spirit and sweet content, that I pity all our great ones and rich men that know not this happiness."—BURTON.

IF a man were to apply all his strength directly to a rock or to a box of merchandise, which he wishes to elevate to some point, he might not be able to move it at all; or at least he might not be able to raise it to the required height. But with a lever, or with a wheel and axle, or a pulley, he effects his object with ease. Here he does not actually gain power: he gains the means of *acting upon the resistance by degrees*. It is like taking this rock to pieces, and carrying up the parts separately; and a little reflection must convince us, that when we employ a machine, we exert not only all the force that would be requisite in such a case, if we did not use the machine, but also as much more as is necessary to overcome the friction and weight of that machine. It is a great error to suppose that, by any mechanical device, force can be *generated*, or even augmented. Misled by such a notion, projectors have imagined that they could adjust levers, pendulums, &c., that would act with a power greater than that which they derived from any external source. It is obvious, and should ever be kept in mind, that the *inertia* of matter, in virtue of which, no particle of it ever moves except in obedience to some force impressed upon it, and in proportion to that force, renders all such projects entirely impracticable. Universally, to overcome a resistance, a force must be exerted equal to that resistance; and, as we have already said, if it be exerted through a machine, the force must be absolutely greater than that resistance. But, on the other hand, force is made up of velocity and the quantity of matter; and hence, if the mass to be moved, or the resistance to be overcome be much heavier than the moving power, we equalize them, if we can, by giving to the *resistance a much slower motion than that which the power has;* thus making the greater velocity of the power compensate for its inferior weight or mass. In all these cases, however, time must be lost; and it must be remembered, as a general principle, that whatever advantage is *gained in respect to power is lost in respect to time**. A man with a machine does no more than in the same time he would have done without a machine, provided he could have divided the resistance into separate parts. In many cases, however, this is impossible; and hence we are enabled, by the aid of machines, to effect what, without them, would have been altogether beyond our power.—*Science and the Arts of Industry.*

* Archimedes is said to have boasted, that, if he had a place on which to stand, he would move the earth. Had such a place been furnished him, and had he been able, moreover, to move with the velocity of a cannon ball, it would have taken him a million of years to have shifted the earth only the twenty-seventh hundred thousandth part of an inch.

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 603. NOVEMBER 27TH, 1841. { PRICE ONE PENNY.

THE BANKS OF THE THAMES. X.

THE THAMES, FROM RICHMOND HILL.

Say, shall we wind
Along the streams? or walk the silent mead?
Or court the forest glades? or wander wild
Among the waving harvests? or ascend,
While radiant summer opens all its pride,
Thy hill, delightful Sheen? Here let us sweep
The boundless landscape: Now the raptured eye,
Exulting swift, to huge Augusta* send,
Now to the sister hills† that skirt her plain,
To lofty Harrow now, and now to where
Majestic Windsor lifts his princely brow.
In lovely contrast to this glorious view,
Calmly magnificent, then will we turn
To where the silver Thames first rural grows.
There let the feasted eye unwearied stray;
Luxurious, there, rove through the pendent woods,
That nodding hang o'er Harrington's retreat;
And stooping thence to Ham's embow'ring walks,
Slow let us trace the matchless vale of Thames;
Fair winding up to where the Muses haunt
In Twickenham bowers, and for their Pope implore
The healing god; to royal Hampton's pile;
To Claremont's terraced height, and Esher's groves,
Where in the sweetest solitude, embraced
By the soft windings of the silent Mole,
From courts and senates Pelham finds repose.
Enchanting vale! beyond whate'er the Muse
Has of Achaia or Hesperia sung!
O vale of bliss! O softly-swelling hills!
On which the power of cultivation lies,
And joys to see the wonders of his toil.—
Heavens, what a goodly prospect spreads around,
Of hills and dales, and woods, and lawns, and spires,
And glittering towns and gilded streams, till all
The stretching landscape into smoke decays.

In these beautiful lines—whose length will be pardoned on account of their beauty—does the poet Thomson speak of the far-famed view from Richmond Hill.

* Poetical writers often allude to London under the designation of *Augusta*, one of the names by which it was known in the times of the Romans. † Highgate and Hampstead.

The town of Richmond is but a mile or two distant from Twickenham, where we left the reader in our last article; yet the whole distance is so studded with attractive and picturesque objects, as to seem much more extensive than it is. Bolingbroke, Peterborough, Pope, Thomson, Reynolds, Horace Walpole, Garrick, Colman, and many other distinguished men, have given a never-dying celebrity to the very small district included within two or three miles of Twickenham, and of which Richmond forms a part; a celebrity arising either from their poetical and pictorial allusions to the scenery, or from their having dwelt on the banks of the Thames at this part.

The town of Richmond, containing about six thousand inhabitants, has been a good deal connected with the reigning families of England. The manor became the property of the Crown in the time of Edward the First, who, as well as his next two successors, resided here. The last-mentioned monarch built a palace here; and since his time, the manor has been the residence of many members of the royal family. Queen Ann, wife of Richard the Second, died here; an event which so affected the king, that he abandoned the palace and allowed it to become ruinous, but it was restored with great splendour by Henry the Fifth. Having been destroyed by fire in 1498, the palace was rebuilt by Henry the Seventh, who changed the name from *Sheen*, which it had hitherto borne, to *Richmond*, from the place of that name in Yorkshire, the earldom of which was one of Henry's titles. Philip the First of Spain, and Charles the Fifth of Germany, were at different times entertained as guests at Richmond Palace. Queen Elizabeth, and afterwards Charles the First, frequently resided here. During the

troubles of the civil war, the palace was taken out of royal hands; but at the Restoration, it was delivered to the queen mother, though in a very dilapidated state; it was shortly afterwards pulled down, and private houses erected on the site, the owners of which hold a lease from the Crown. The building in which some branches of the royal family have since resided is the *Lodge*, and not the palace properly so called.

There are two parks belonging to Richmond, the Old or Little, and the New or Great Park. The Old Park extends along the banks of the Thames nearly from Kew to Richmond, and comprises the extensive gardens, dairy-farm, and grazing-farm, so much esteemed by George the Third. The New, or Great Park, enclosed by Charles the First (the older park having belonged to the palace of the early kings) is situated southward of Richmond, extending from the hill to the Kingston road. It is eight miles in circumference, and comprises an area of more than two thousand acres.

The elevated spot near the town, known as Richmond Hill, is the most attractive feature in the neighbourhood, on account of the view from its summit,—a view which embraces everything required to constitute a picturesque landscape, consisting of a fertile and richly-wooded plain, through which the Thames flows in a winding course, with its banks ornamented by numerous mansions and villas, and bounded by hills in the distance. Its proximity to the metropolis, combined with the attraction of scenery which it possesses, and the facility of conveyance both by land and water, cause it to be much resorted to.

Somewhat to the north-east of Richmond is the pretty little village of Kew, situated on the southern bank of the river, opposite Brentford. There is a royal palace and garden at Kew, which have been long celebrated for their beauty,—at least the garden. The palace is nominally occupied by the King of Hanover, as Duke of Cumberland. It was a private mansion until the time of King George the First, but it then came into the hands of the Crown. George the Second, when Prince of Wales, frequently resided there, and Thomson, the poet, who at that time inhabited a house at Richmond, was a frequent visitor at his table. The Princess Dowager of Wales, mother to King George the Third, ordered Sir William Chambers to lay out the grounds and form a conservatory and botanic garden. George the Third, who resided for a considerable time in a mansion since called the Nursery, in which most of the royal family were brought up, and in which his consort, Queen Charlotte, died, greatly improved and extended the gardens, which he united to those of Richmond, and began to erect a royal palace in the ancient style of English architecture, which, after remaining for several years in an unfinished state, was taken down in 1828. The royal gardens are tastefully laid out, and embellished with temples of the various orders of Grecian architecture, a Turkish mosque, and a Chinese pagoda of considerable elevation, from the summit of which a most extensive prospect is obtained of the scenery on the banks of the Thames, and of the surrounding country.

The botanic garden at Kew is in some respects distinct from the garden or pleasure-grounds attached to the palace. Its avowed purpose was to spread the knowledge of botany through the country, by collecting specimens of rare plants from all parts of the world, and supplying duplicate specimens to other gardens. It occupies about fifteen acres, of which a part is set off as an arboretum, for the reception of trees, and the remainder is occupied by stoves and greenhouses, borders of herbaceous plants, spaces left for the arrangement of greenhouse plants in the open air in summer, offices, yards, &c. The arboretum contains many very fine specimens of hardy exotic trees and shrubs, most of which are marked with labels, numbered, and referring to a private catalogue in the garden. Among the stoves and greenhouses is one filled with magnificent specimens of New Holland plants, a second with small plants from the Cape of Good Hope and New Holland, a third with succulent plants, and several others with stove plants of different kinds. From the peculiar manner in which the botanic garden is, on the one hand, connected with the palace at Kew, and, on the other, dependant on the nation for support, it is not easy to say whether it is a public or a private establishment. About three or four years ago a Committee appointed by the Lords of the Treasury commissioned Dr. Lindley to inspect the garden, with a view of reporting how far it answered the purpose for which it appears to have been established, and for which a portion of the national revenue is every year allotted. In his Report, Dr. Lindley makes the following statement:—

> After all the explanation that has been offered; after allowing full weight to the assertion that the botanical garden at Kew has always been a private establishment; admitting, moreover, that a larger number of plants has been given away than is generally supposed, and that in many cases applications for plants have been liberally complied with, which is undoubtedly the fact; it really does seem impossible to say that it has been conducted with that liberality or anxiety to promote the ends of science, and to render it useful to the country, which it is usual to meet with in similar institutions elsewhere.

We may here remark that the public are admitted to the botanic garden daily, during certain hours in the afternoon.

The church of Kew is situated on a pleasant grassy spot called the "Green," between the bridge and the entrance to the botanical garden. It was erected in the reign of Queen Anne; and in the church-yard attached to it lie the remains of two celebrated English painters of the last century, Gainsborough and Zoffany, the former of whom died in 1788, and the latter in 1810. The scenery of Kew was celebrated by Thomson in the following lines:—

> Fast by that shore where Thames' translucent stream
> Reflects new glories in his breast;
> Where splendid as the youthful poet's dream
> He forms a scene beyond Elysium blest;
> Where sculptured elegance and native grace
> Unite to stamp the beauties of the place;
> While sweetly blending, still are seen
> The wavy lawn, the sloping green,
> While novelty with cautious cunning
> Through every maze of fancy running
> From China borrows aid to deck the scene.

Let us now cross to the Middlesex side of the water. Immediately opposite a point of the river midway between Richmond and Kew, is the pleasant village of Isleworth. It consists of one principal street, filled with respectable and well-built houses. The environs are profusely rich in beautiful scenery, both banks of the river being adorned with elegant mansions and villas, with their annexed pleasure-grounds and shrubberies. A large portion of the land in the neighbourhood is cultivated by market-gardeners, who supply the London market; raspberries and strawberries are produced here in great beauty. It was at Isleworth that the insurgent barons held their head-quarters for a considerable time, in the reign of Henry the Third, under Simon de Montford, earl of Leicester. There was a palace at Isleworth belonging to the Earl of Cornwall, the king's brother; and during a contest between the king and the nobles, this palace was razed to the ground by a riotous mob, which proceeded from London for that purpose.

But by far the most interesting object near Isleworth is Sion House, the seat of the Duke of Northumberland. The history of this house, and the manor belonging to it, carries us back to the year 1414, when a splendid monastery was founded at Twickenham, for sixty sisters, thirteen priests, four deacons, and eight lay-brethren of the order of Saint Augustine. About

twenty years afterwards, the community removed to Isleworth, where a spacious edifice called the monastery of Sion was erected for their reception. At the dissolution of monasteries under Henry the Eighth, the site was granted to Sir Edward Seymour, afterwards Duke of Somerset, and Lord Protector, who built thereon the superb mansion since known as Sion House. After his fall it came into the hands of the Percys, earls of Northumberland.

The mansion, which underwent several alterations and additions in the seventeenth century, under Inigo Jones, is a spacious quadrangular and embattled structure, with towers at the angles. The entrance from the Western Road is through a handsome gateway, on each side of which is an open colonnade leading into a spacious lawn, ornamented with clusters of stately trees, and shelving to the margin of the Thames, which pursues its winding course along the border of the park and grounds. A noble flight of steps leads to the great hall, which is decorated with colossal statues, and a fine bronzed cast of the Dying Gladiator. The hall opens into a handsome vestibule, the floor of which is of scagliola marble, and the walls richly ornamented in relievo, and embellished with gilt trophies. Twelve columns of verd antique, supporting gilt statues, and sixteen pilasters of the same rare and costly material, impart an air of sumptuous magnificence to this part of the building. The gallery, which contains the library and museum, is one hundred and thirty-three feet in length, and is finished after the antique style, in stucco, of the most light and elegant design. The ceiling of this gallery is embellished with paintings, and ornamented with various devices, harmonizing with the general character of the whole; and immediately below it are paintings in medallions, exhibiting a series of portraits of the Earls of Northumberland, of the Percy and Seymour families. To describe the apartments of such a building would be a useless task; for it may well be supposed that a residence of one of the highest and most ancient of our nobility exhibits all that wealth and taste can accumulate in the way of decoration.

A little northward of Sion House is "dirty Brentford," a town which more than one poet has signalized in a rather uncomplimentary manner; for Gay speaks of

> Brentford, tedious town,
> For dirty streets, and white-legged chickens known.

And Thomson has spoken of

> Brentford town, or town of mud.

The town consists principally of one long street, upwards of a mile in length, which contains a few manufactories; but the chief source of employment to the inhabitants used formerly to be derived from the immense traffic along the Great Western Road, which passes through the town. But since the opening of the Great Western Railway, a considerable portion of this traffic has been removed from the high road, and Brentford has suffered in consequence. Brentford is considered the county town of Middlesex: as the elections for the county used to be held there, as are now the nominations of candidates. A neat stone bridge, erected in the year 1825, connects Brentford with Kew.

THOUGH religion in its ordinary mode of exhibition commands but little respect, when it rises to the sublime, and is perceived to tincture and pervade the whole character, it seldom fails to draw forth the homage of mankind. The most hardened impiety and daring profligacy will find it difficult to despise the man who manifestly appears to walk with God, whose whole system of life is evidently influenced and directed by the power of the world to come. The ridicule cast on religious characters, is not always directed towards their religion, but more often perhaps to the little it performs, contrasted with the loftiness of its pretensions; a ridicule which derives its force from the very sublimity of the principles which the profession of piety assumes.—ROBERT HALL.

THE DEAD SWALLOW.

A BIRD—but 'tis a foolish thought—
To me doth seem as though it were
A little spirit of the air,
Too happy to be killed or caught;
And I could weep to see a thing,
So joyous in its volant mirth,
Dashed rudely down from sky to earth
With bleeding breast and broken wing.
Thou did'st not deem, an hour ago.
Poor bird! when in yon azure height
Thy taper wings were twinkling bright,
Of lying here so cold and low!—
When morn hung glimmering o'er the plain,
Thy breast was wet with twilight dew—
But now, the life-blood oozing through
Hath dyed it with a darker stain;
And now, to skim the sunny lea,
And oft with sortive splash to break
The mirror of the broad blue lake—
Poor bird! is never more for thee!
Soon—when our northern summer dies—
Thy gathering clans will gaily flee,
To softer climes beyond the sea,
Through paths untracked by human eyes;
But thou! thy pilgrim toils are o'er—
So here I'll pile thy sylvan bier
With leaves which winds have scattered sere,
Poor bird! like thee to rise no more!——J. S. B.

I WILL mention three facts, illustrative of the vastly superior extent to which, in commercial countries, credit is necessarily employed as an instrument of exchange beyond *real* or *metallic* money. These are, first, that the entire commerce of Scotland, both foreign and domestic, is carried on without the practical use of a single gold piece. Secondly, that at the Bankers' Clearing-house in London, exchange transactions are *daily* settled to the extent of five millions sterling—on some days of *thirteen* millions—without the intervention of any coin whatever, and by the employment of a floating balance of only about £200,000 in Bank of England notes, themselves merely representing the *credit* of that establishment. Thirdly, that there is at every moment in existence in England an aggregate mass of transferable credit in the shape of book-debts, foreign and inland bills of exchange, mortgages, annuities, and other moneyed liabilities, including the great national debt itself, to an extent, as regards the whole empire, certainly of *several thousand millions* in value, the whole of which is strictly in employment as a medium of exchange; an instrument, that is, whereby one individual obtains possession, by consent, of the produce or property of another; while the amount of real or metallic currency circulating through the same countries does not, perhaps, exceed thirty millions, and might probably, as in Scotland, *be dispensed with altogether*, without in the least affecting the extent of this prodigious mass of transactions *on credit*.—SCROPE'S *Political Economy*.

WHEN Europeans reached China three hundred years ago, they found all arts arrived at a degree of perfection which was quite astonishing, but which the Chinese have not since surpassed. Later still, they discovered vestiges of high state of knowledge, which had disappeared. The nation was industrious and mechanical; the greater number of scientific methods were traditionally preserved; but science itself no longer existed. This explains the kind of singular immobility in which was found the mind of the Chinese. In following the steps of their fathers, they had forgotten the reasons after which their fathers worked and acted. They made use of the form without the sense. They kept the instrument, but had no longer the power of modifying or improving it. Accordingly nothing was left to them but eternal imitation, all being dark and unknown to them beyond the beaten path. The source of knowledge was dried up, although the streams continued somehow or another to flow. In this manner China continued to subsist for ages, peaceable, industrious, rich, and happy. War and revolution were unknown to them. Might not some similitude be found between us and those barbarians? Some people allow light to be ravished from them, whilst others tread it out beneath their feet.—DE TOCQUEVILLE.

ON CHESS. XXII.

THE KNIGHT'S MOVE.

WHILE studying the various powers of the pieces at chess, we cannot fail to be struck with the remarkable move of the knight: we have made it probable that the move of this piece originated in a compound of the shortest moves of the bishop and rook; but in *modern* chess this piece is the only one which is allowed to move over the heads of other pieces. The peculiar power which this privilege gives to the knight in actual play, it is not our purpose here to discuss: another interesting question will occupy our attention. A little consideration will show that the king, provided no other piece were on the board, could pass in succession to every one of the sixty-four squares, either with or without going twice over the same square; the queen could do the same, and so likewise could the rook. But the pawn, as it can only move straight forwards (except in capturing, and even then it moves obliquely forwards), cannot traverse the sixty-four squares; nor can the bishop do so, for one consequence of his diagonal move is to confine him to squares of one colour: consequently, he can traverse only thirty-two squares. The knight is yet remaining, and a question arises,—Can the knight traverse the sixty-four squares without stepping on any square twice? The solution of this question is one of the most remarkable circumstances in the history of chess; for as it was soon found that the problem could not be solved by mere inspection, the difficulty attending it drew the attention of ingenious persons towards the subject. Difficulties act upon scientific and ingenious minds rather as incentives than as discouragements; and this problem of the knight's move attracted the notice of first-rate mathematicians, who might not otherwise, perhaps, have paid any attention to chess and its associations. Among the distinguished men who have endeavoured to solve this problem are Euler, Bernouilli, Mairan, Demoivre, Montmort, Willis, and Dr. Roget; and we propose in the present chapter shortly to consider the results at which they arrived.

Most of the solutions of the problem (for we may here state at once that it *can* be solved,) have been arrived at by repeated trials, without proceeding in accordance with any particular law; and, we doubt not, that most of our readers could, with a little patience and ingenuity, carry the knight over the sixty-four squares, after many trials. But the object of such a man as Euler, whose profound mathematical talents led him to seek for principles in every department of study, was to elicit some general law by which the required object might be attained. He was successful in tracing the outline of a rule or law by which this might be accomplished; but the practical application of it was so difficult, that we doubt whether any one but himself has ever adopted it. The thorough mastery of the subject can only be attained when we are able to solve the problem in all its varieties, that is, to begin the circuit of the knight at any given square, and to end at any other given square.

In order to trace the power of the knight step by step, an anonymous writer, about twenty years ago, gave representations of imaginary chess-boards, rectangular, but containing a smaller number of squares than a real board; and he was able to demonstrate, that if the board contained 12, 20, 21, 24, 25, 28, 30, 32, 35, 36, 40, 42, 48, 49, or 56 squares, the knight could be carried over the whole of them, without going twice on the same square. These moves of the knight may be represented either by numerals, or by lines drawn on a diagram: the latter is the more perspicuous and pleasing of the two; and we will here give representations of the modes of proceeding in a few of these cases. Let us suppose there are three boards, containing respectively 5×5, 6×6, and 7×7 squares, the knight can be carried over them in the following manner:—

The angles represent the various positions of the knight; and the lines, his paths from one square to another. Beginning with fig. 1 (*a*), we see that if the tour commences at the left hand bottom corner, all the twenty-five squares in succession can be traversed without any one being covered twice; and the route terminates at the central square. In fig. 1 (*b*,) the tour commences at the right-hand bottom corner square, and, after extending over the thirty-six squares in succession, ends at the square next above the initial square. In fig. 1 (*c*,) the route is over all the forty-nine squares, and the terminal square is at a considerable distance from the initial one.

Fig. 1 (*a*).

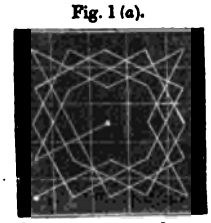
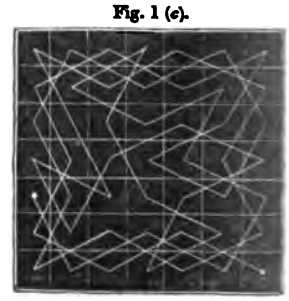


Fig. 1 (*b*).

Fig. 1 (*c*).



These examples show that the knight may make the tour of a chess-board containing a smaller number of squares than the regular board; and there is little doubt that it might also be done on a board of more than sixty-four squares*. These imaginary boards have helped to devise systems whereby the problem can be solved on a real board.

We will now give three diagrams, representing three modes of solving the problem on a regular chess-board; and the reader would gain a clear idea of the subject by performing the same operation with a knight: he will do well to mark each square with a counter, as the knight steps on it, in order not to go twice on the same square. In the first diagram we shall commence at one corner and terminate at another: in the second, we shall cover all the thirty-two squares of one half of the board, before proceeding to the other half: in the third we shall give a *re-entering* route, that is, one in which the *last* square is situated at exactly a knight's move from the *first* square, so that the tour may be re-entered on, and performed in precisely the same way any number of times.

In fig. 2 (*a*,) the regular board of sixty-four squares is traversed by the knight, beginning at one corner, and ending at another; this, it will be seen, forms a figure having some degree of symmetry, but less so than one or two which we shall hereafter give. In fig. 2 (*b*,) the squares are separated into two portions, one of which is traversed before the knight crosses over to the other. Fig. 2 (*c*,) possesses this distinguishing property, that we can commence the tour on *any* square: in drawing the diagram, we commenced at the right-hand bottom corner, and ended at the knight's third square; but any other initial square might have been selected, because the route is an interminable one, re-entering into itself.

Many other ingenious modes have been devised, some of which we shall notice hereafter; but no satisfactory attempt to give a *general* solution to the problem had been made public, until the month of April, 1840, when Dr. Roget communicated a short but admirable paper to the *Philosophical Magazine*, unfolding a method by which the problem could be solved in any

* Ciccolini has solved the problem of the knight's move over a board of one hundred squares, as well as over a circular board of sixty-four squares.

Fig. 2 (*a*).

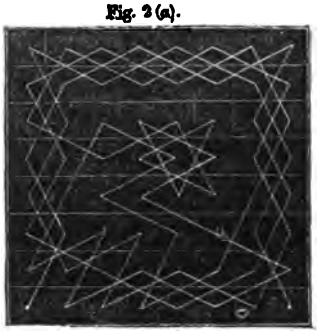


Fig. 2 (*b*).

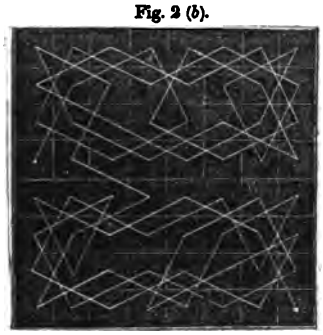
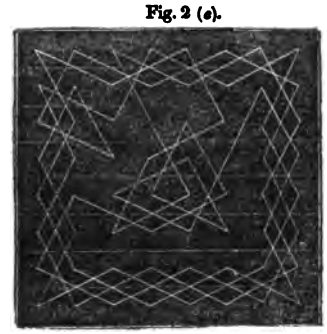


Fig. 2 (*c*).



form, that is, by beginning at any given square, and terminating at any other given square of the opposite colour*. We will now attempt to explain this ingenious method.

In the first place, the reader must conceive the board to be divided into four quarters, of sixteen squares each, by two lines passing through the middle at right angles to each other, and parallel to the edges of the board. Then selecting any quarter, we shall find that the sixteen squares may be divided into four systems, each of which consists of four regular knight's moves. These systems are shaped, two as perfect squares, and two similar to the rhombus, lozenge, or diamond (in future we shall use the last of the three names). Thus in fig. 3 the sixteen squares, constituting one quarter, are divided into four systems, represented by these four kinds of lines, ———— ------ - - - - - - - - - - - - forming two squares and two diamonds; and it will be seen that the four sides forming each of these figures, are regular knight's moves.

In the next place, it will be found, that, after passing over the four squares of one system in one quarter of the board, we can pass to the same system in an adjoining quarter; and, after traversing that system, can pass on to another quarter, and so on; thus, in sixteen moves, we can traverse the sixteen squares forming one system of the whole board. We will demonstrate this as to *two* of the systems, and the reader will then readily admit its truth as to the other two. In fig. 4 (*a*,) we traverse all the sixteen squares of the system ————; and in fig. 4 (*b*,) all those of the system ..... The diamonds in the former case, and the squares in the latter, *appear* to be incomplete, because only three out of the four sides are represented; but this necessarily results from the conditions of the problem, for we must not go twice on the same square, which we inevitably should do if we drew the four sides of each figure: the knight, however, steps on the squares representing the *angles* of each figure, and this is sufficient to make our description correct.

Fig. 4 (*a*).

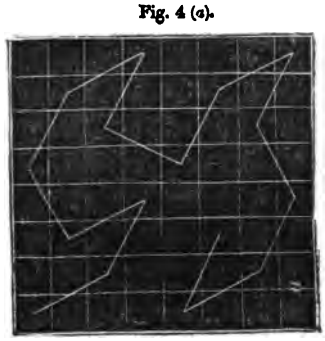
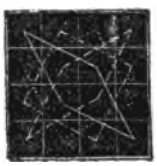


Fig. 4 (*b*)

Fig. 3.



Now the question which arises, is this:—Can the knight after having traversed the sixteen squares of one system, pass on to another system? He can do so under certain conditions: he can pass from a square to a diamond system, or from a diamond to a square system; but not from a diamond to a diamond, or from a square to a square. Moreover, the sixteenth, or last square of each system ought to be as near the *centre* of the board as possible, since, if it be at or near a corner, the passage to another system may be difficult, or even impossible. If we examine fig. 4 (*a*,) we shall see that, beginning at the corner square, the terminal one of that system is such as to allow the knight to step on to either of the square systems, there being a choice of four moves, of which two belong to each of the square systems: similarly, from the terminal square in fig. 4 (*b*,) we can select four squares to move to, of which two belong to each of the diamond systems.

If the necessary precautions be attended to, it will now be evident that the problem may be solved by the method under consideration. Let the initial square, for example, be in one corner: it will then belong to a diamond system. After traversing the sixteen squares of that system, the knight passes to a square system, which is succeeded by the other diamond, and this by the other square, when the tour terminates. A little practice will give the necessary facility, provided the player attends to these two points:—1st, to complete the sixteen squares of one system before he passes to another: 2nd, to terminate each system rather towards the centre o the board than towards one corner. Generally speaking, he may pass round either to the right or to the left *ad libitum*, and may choose any one of the sixty-four squares he pleases, as the initial square.

In our next article we will apply this method to several remarkable forms of the problem under consideration.

* Since the knight at each move, goes to a square of a different colour from that which he before occupied, all the *odd* squares are of the same colour as the initial square, and all the *even* squares must be of the opposite colour; consequently the sixty-fourth square, which is the terminal one, must always be of the opposite colour to the initial one.

We say of a false man, Trust him not, he will deceive you; we say concerning a weak and broken staff, Lean not on it, for it will deceive you. The man deceives because he is false, the staff because it is weak, yet our own heart is both. The heart of man hath not strength to think one good thought of itself; it cannot command its own attention to a prayer ten lines long, and no wonder then that in secret it should grow weary of a holy religion, which consists of so many parts as to make the business of a whole life.—JEREMY TAYLOR.

THE CASTING OF STATUES IN BRONZE.

THE preparation of statues from brass, bronze, or other metal, is a process requiring an intimate union of that refined and elevated taste which distinguishes the sculptor, with the knowledge of the metals and their qualities so indispensable to the founder. We will endeavour to give a popular description of these operations.

In the first place, it must be observed that all bronze statues are hollow, consisting of a mere shell, delicately worked on the exterior, and more rudely fashioned in the interior. To produce this shell a complicated series of operations are necessary, comprising alternate modellings and castings. The nucleus with which the artist commences his work is an inner mould or core, composed of potter's clay, plaster, and brick-dust, mixed with water to a working consistence; this clay is worked upon a slight iron frame or skeleton, and fashioned into a rude resemblance of the figure about to be cast, but smaller in all its dimensions. The rough core, thus formed, is covered with wax of such thickness, that the dimensions of the figure may be in excess of that intended to be executed: and the sculptor proceeds to sculpture this waxen surface with all the delicacy and care which he would bestow upon a marble statue; working out his entire design on the wax. This part of the process being completed, little tubes of wax are fixed perpendicularly to the surface, all over the figure, for a purpose which will be presently explained; and the whole of the wax is then coated or covered with a layer termed the shell. This shell consists of strata, formed of different materials; the first is a composition of clay and old white crucibles well ground and sifted, and mixed with water to a creamy consistence; this is laid on with a pencil, in the manner of paint, seven or eight successive coats being given, and the surface dried after each. The next stratum consists of the same substance together with a little earth to give it more solidity, and the third stratum is still more solid. The soft or semi-fluid shell, thus laid on, takes the impression of the different parts, which it afterwards imparts to the metal. The shell is now secured by several bandages of iron wound round it, secured to an iron ring at the top, and to a grating at bottom, on which the model had been erected.

Thus far all the operations may be classed under the head of modelling; but the next process is a very curious one, viz., to melt out the wax from between the clay core and the earthen shell, and thus leave a vacuity afterwards to be filled up with metal. The grating on which the model has been built up is placed at the bottom of a square hole made in the ground. This hole is lined with free-stone or brick; and beneath the grating is a smaller hole provided with a furnace. When the figure is complete, a moderate fire is kindled in the small furnace just alluded to; and the heat, being confined and equalized by boards placed over the hole, speedily melts the layer of wax between the core and the shell, and causes it to run down from all parts of the figure, out of pipes introduced for that purpose at the foot of the mould. There must now be a vacancy everywhere where the wax had been, and this vacancy is carefully preserved.

The hole in which the figure is placed is then entirely filled up with bricks; and the fire in the furnace is continued until the whole contents of the furnace, mould as well as bricks, are thoroughly red-hot. The furnace is then extinguished; and when the contents are cold, the bricks are removed, and the space is filled up by earth rammed in closely round the figure.

All is now ready for the introduction of the melted metal, and we will therefore proceed to speak on that point. Sometimes brass is the metal of which statues are formed; but, generally speaking, the metal is an alloy of copper and tin. In every case copper is one of the component metals, for brass is a compound of copper and zinc; while bronze, or statuary metal, as well as bell-metal and gun-metal, are compounds of copper and tin. The chief difference between the last-named three compound metals is in the proportion between the copper and the tin. Generally speaking, bronze contains a larger proportion of copper than of tin; but most statuaries have particular combinations which they prefer. The furnace in which the bronze is melted somewhat resembles an oven, and is provided with three apertures, one to put in the wood, another for a vent, and a third to run the metal out at. From this last-mentioned aperture, which is kept closed while the metal is in fusion, a little tube or canal extends, by which the melted metal is conveyed to a large earthen basin situated over the mould, and from this basin spring a number of little jets for conveying the metal to different parts of the figure. All the jets are terminated or stopped with plugs, which are kept close until sufficient metal is contained in the basin to supply the whole figure; they are then speedily removed by iron rods attached to them, and the melted metal rushes into, and fills up all the cavities which had been previously occupied by the wax.

When all is cold, the earth which had been pressed into the pit is removed, the shell or crust is broken off from the metal, and the clay core is removed from within it; leaving a thin metallic figure, whose external surface represents the object intended, but needs to pass through the hands of the sculptor, who repairs any defects.

Where the statue is very large, the quantity of metal necessary for this process is considerable, and constitutes a formidable item in the expense. Hence various plans have been suggested for producing very thin statues, in order to effect a saving in the quantity of metal employed. One such method, employed to a considerable extent on the Continent, is the following. The figure is first made in plaster of Paris, of the exact shape and dimensions it is intended to be when completed in metal, and placed in an erect position on a firm platform. It is then covered all over by a shell, composed of a number of pieces fitted very correctly together, so that they may be removed and built up in another situation, forming in the interior a figure exactly resembling the original one in plaster. The work is commenced at the bottom, by covering with strong sand such part as is intended to form one block of the shell to about an inch or an inch and a half in thickness, to which is added about one foot in thickness of plaster of Paris, which unites with the sand, and forms one block: the remaining part of the figure is completed up to this height all round, in a similar manner, by blocks, of which the number and arrangement must be such, that they may be removed when the shell is complete, without disturbing the sand. Another course is now commenced and completed in the same way, and the work is thus continued until the whole figure is completely surrounded by the shell. During the progress of the work, tubes are cast in with the plaster, for the admission of the metal, and for the escape of the air, as in the common method; and iron rings are let into the plaster for the convenience of raising and removing the blocks. When the shell is complete, it is taken to pieces and removed to the casting-pit, where it is carefully rebuilt, and the interior filled up with the material to form the core. It is now a second time taken to pieces, leaving the core of the exact shape and dimensions of the original figure, from which is scraped off such a quantity of material as will give the necessary thickness of metal to each part of the figure. The shell is then again put together in its original position, and will, therefore, leave a space between the interior of it and the core, exactly equal to the thickness of material which has been removed. Nothing now remains to be done, but drying the mould, and pouring on the metal, which operations are performed in the ordinary way.—This method effects a great saving of metal; but it at the same time requires much care and dexterity.

RURAL SPORTS FOR THE MONTHS

NOVEMBER.

MYSTERIOUS POWER! which guides by night
Through the dark wood the illumined sight;
Which prompts them by the unerring smell,
The appointed prey's abode to tell,
Bore with long bill the investing mould,
And feel, and from the secret hold
Dislodge the reptile spoil! But who
Can look Creation's volume through,
And not fresh proofs, at every turn,
Of the CREATOR'S mind discern:
The end to which his actions tend;
The means adapted to the end;
The reasoning thought; the effective skill;
And, ruling all, the Almighty will?

BISHOP MANT'S *British Months.*

NOVEMBER introduces the commencement of a sport that must be practised in bleak and marshy districts by those who are its advocates. The shooting of woodcocks and snipes demands on the part of the sportsman a power of resisting the effects of the wet and cold season, and of bearing the inconveniences resulting from the nature of the ground. Of snipe-shooting, in particular, it has been said, that the man who follows it should be possessed of a strong constitution, not liable to catch cold, and should have all the fortitude as well as exertion of a water spaniel. To succeed in his sport, he must be habitually inured to wet, dirt, and difficulty, and not be daunted by the most inclement weather. It appears strange, to those who have but little sympathy with the pursuits of sportsmen, that, at a season of the year, when even the most favoured spots of our island present few attractions to out-door employments, and when, except for the transaction of necessary duties, we might naturally be willing to shelter ourselves in our comfortable homes from the cheerless and foggy atmosphere without,—that, at this uninviting season, the members of the sporting community should find their chief delight in seeking out just the most dreary, and wet, and chilling localities in our own and the sister island, and there, in defiance of bog, marsh, or half-frozen pool, should follow, with so much enthusiasm, the task of destroying our winter visitants.

Woodcocks are fond of wild, marshy copses, where, near the pools, which are frequent in such spots, they can bore the ground with ease, and find abundance of food. Solitude, shelter, and humidity, are essentials with these birds; and, therefore, they shift their quarters as cultivation changes the character of a country. Devonshire, Dorsetshire, Cornwall, and Sussex, are the favourite English localities for these birds; and both North and South Wales are celebrated for the sport they afford.

The Woodcock (*Scolopax rusticola*) is placed at the head of the Snipes proper, and, according to Bewick, is fourteen inches in length, twenty-six in breadth, and weighs about twelve ounces. The shape of the head is remarkable, being in profile, rather triangular than round, and extending over the base of the bill in all directions, so that, in whatever way the bill may work in the ground, the weight of the head gives force to its movements, as it penetrates the oozy soil in search of food. The bill itself is, however, the distinguishing mark of this family of birds. The upper part, or mandible, is three inches long, and projects beyond the lower one, ending in a kind of knob, which is susceptible of the finest feeling. By means of this curious organ, the woodcock, in common with other birds of the same genus, is enabled to distinguish the small worms, &c., abounding in soft moist grounds, and then to extract them with its sharp-pointed tongue. With the bill also it explores among fallen leaves, and other rubbish, in search of insects which shelter underneath. Three varieties of woodcocks, common in Britain, are noticed by Dr. Latham. The head of the first variety is of a pale red, the body white, and the wings brown; the second is of a dun, or rather cream colour; and the third of a pure white. There are many other variations in the plumage of these birds.

The grand resort of woodcocks during summer, is understood to be the marshy woods to the north of the Baltic, though this species is generally extended throughout all the climates, both hot and cold, of the Old Continent, and is also found in both North and South America. Everywhere it is a voyaging bird, though its migrations are mostly from the mountains to the plains, and from the plains to the mountains, and not from one distant country to another. It visits this country at the same time with the Red-wing; and is supposed to come from Sweden. The most numerous tribes arrive in November and December, and as the Alps and Pyrenees are stated to be favourite localities with woodcocks in summer, it is probable that some of our winter visitants arrive from thence. The arrival of these birds is hastened or retarded according to the weather: they appear to wait a favourable gale to waft them towards our shores without much exertion; for, that they are scarcely able to endure their flight is evident from the fatigued condition in which they often reach us. Compelled to alight on the first spot which offers itself, they have been not unfrequently picked up in the open streets of the towns on the coast, being too tired to make their escape. They are in this case usually found to be extremely lean and exhausted, which is the more remarkable, as other birds arriving at the same time, and from an equal distance, show little symptoms of fatigue. It appears that this emaciated condition cannot be attributed solely to exhaustion on account of their long flight; since those which are killed in Norway before the migration has taken place, are already in a poor condition, and infested with vermin. It is therefore probable that their fatigue is the consequence of their debilitated state, and not the cause of it. At first the woodcocks arrive one by one, or two by two, but later in the season they appear in flights, according as the wind serves their purpose. They are often descried for the first time in the evening of a misty day, and are found to alight indifferently in woods, hedges, heaths, &c. They are very shy and retired in their habits, and rarely take wing during the day, unless disturbed. At close of day they quit the covers, and wander over the meadows in search of moist places, where they bore for food, retiring to their hiding places again at morning dawn. The eyes of these birds are large and convex, so that they cannot see well except by twilight. A stronger light appears painful to them, and it is probably owing to the weakness of their visual organs, that they have acquired a character for stupidity. In their mode of feeding the eye is not called into use, and they depend on the exquisite sense of feeling in their long bill, aided perhaps by acuteness of smell. As in the duck tribe, the nerves of the bill are extremely numerous, and highly sensible of discrimination by the touch, so that when plunged into the soft earth, not a worm that is within reach can escape.

Although the woodcock, in the great majority of its numbers, is a bird of passage in Britain, yet nests and broods have been discovered both in England and Scotland, so that it has of late been classed among our native birds. Their nests are composed of leaves, or dry plants, heaped on the ground, against the trunk of some tree, or under a thick root. The eggs are dull yellowish white, blotched with reddish brown, and are about four or five in number. They are rather larger than those of the common pigeon, and said to be very good eating. The young birds are voracious feeders; they quit the nest when they are only covered with a soft down, and even begin to fly before they have any other feathers than those of the wings. The number of woodcocks in our islands is generally admitted to be on the decrease, and Mr. Blaine, in noticing the circumstance, complains that these birds are unmercifully pursued, not, as formerly,

by one gunner from every village, two or three from every town, and twenty or thirty from every city, of which number not more than one out of five was a ready shot, but by the far more numerous and practised shooters, who in our day have learned to handle the gun. "The common principles of humanity," says our author, "should prevent a war of utter extermination of a race that comes to seek food and protection from us."

The Common Snipe (*Scolopax gallinago*) is also provincially called *snite*, or *heather-bleater*. Though agreeing very much in external appearance with the woodcock, it differs from it in natural habits, and the place which the woodcock chooses as cover during the day-time, and for the concealment of its nest in the breeding season, is one which would not suit the wants of the snipe. The latter bird prefers the open marshy grounds, and seeks no other concealment than is afforded by tufts of heath and grass. Snipes are still more generally diffused than woodcocks, and there is no portion of the world in which some of them have not been found. They are so numerous in the rice-grounds of Egypt, soon after the crops have been gathered in, that it is not uncommon for a person to shoot a basket-full in a day. The soil is, however, so completely impregnated with water, that the sportsman finds it fatiguing work to traverse the fields, and sinks at every step he takes, sometimes above his knees. These birds are common at the Cape of Good Hope, and in the islands of Ceylon and Japan. They greatly abound in some parts of Ireland, so that forty-three brace have been killed by one gentleman in six hours. The common snipe weighs about four ounces; it is near twelve inches in length, of which the bill occupies three inches. The head is black, with a light rufous stripe down the middle, and others surrounding the eyes; the throat is white; the cheeks, neck, and upper breast mottled with black and rust-coloured patches; the wings, tail-coverts, and back, are barred with the same; the lower breast and belly, white; the legs are in some cases of a dusky lead-colour, in others green.

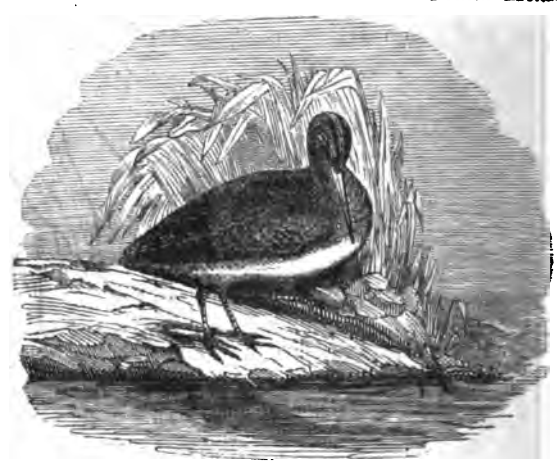
Autumn is the season for the arrival of this bird in most of the southern and western countries of Europe. It is then met with in meadows, marshes, bogs, and along the banks of streams and rivers. In walking it carries its head erect, without either hopping or fluttering, and gives it a horizontal movement, while the tail moves up and down. On taking flight, it rises so high in the air, as often to be heard after it is lost sight of. The bill of the snipe is no less remarkable than that of the woodcock, being adapted for boring in the soft sludgy ground, where worms abound. It is very interesting to remark the exact adaptation of form in different birds to their peculiar modes of life. In dabbling birds, which sift and turn up the mud of shallow streams with their flat bills, we find the boat-shaped body, the web-foot, and all the necessary adaptations for swimming and diving; but the snipes always have their feet on the ground while they feed, and we find those feet, not indeed so well adapted for walking on elastic vegetation, inasmuch as they are destitute of the long hind toe, which is so essential for that purpose, but yet remarkably fitted for walking on the surface of soft mud, and in those moist and marshy places which form their favourite localities, while they are not in any way adapted for swimming or diving.

In spring, when the low grounds begin to get dry, snipes make their way to more northerly situations, or to those upland regions where the winter lasts longer, and the surface of the ground continues humid. Some few, however, remain in most parts of the country during summer; and in the north and north-west of Britain and in the bogs of Ireland they are numerous. The nest of the snipe is always in close concealment, among the thickest herbage. It is rudely constructed of vegetable fibres, sometimes lined with withered leaves. The eggs are four in number, arranged in the form of a cross with the small ends meeting in the centre: they are of a pale greenish grey, with brown spots. The young leave the nest as soon as they escape from the shell, and the plumage which they rapidly acquire is at first darker than that of the old birds. Their feet are so well developed that they are soon able to go in quest of their own food. The bill is, however, short, and does not attain its full length for two or three months, nor its proper consistency till the following spring. Snipes lie very close in the herbage at all times, and are with difficulty raised to the wing. Their flight has often so many turnings and windings as to make them difficult game. Birds of prey also find the snipe a troublesome and dexterous object of pursuit. In the first place, they have to beat a long time before they can make it take the wing, and then, if the snipe gets the least advantage, it doubles so often and so rapidly that if the hawk is not altogether thrown out, the chase is often a lengthened one.

The snipe usually grows very fat both in Europe and North America, and after the early frosts, its flesh acquires a fine and delicate flavour. It is cooked like the woodcock without extracting the entrails, and is everywhere esteemed as an exquisite game. The fat of the snipe is particularly delicate, and is not apt to cloy or to disagree with those who eat it. Snipes are more numerous than woodcocks in this country, and in the fenny districts are especially abundant. In frosty or snowy weather, these birds resort in numbers to warm springs, and other places where the ground remains unfrozen, these being the only situations in which they are able to procure food. Snipe-shooting is met with in the greatest perfection in Ireland; in Wales, also, both North and South, snipes are plentiful, whether in the mountains or in the more level districts. The mossy lands of Scotland, and the vicinity of the lochs, afford these birds in considerable numbers; while in England, the counties of Cambridge, Lincoln, and Northampton, and the Essex marshes, are their favourite resorts.

Recluse in CUMBRIA's humid fells,
Or SCOTIA's dank and rushy dells,
Or where o'er vale or mountain's head
Green ERIN's heathery swamps are spread;
You'll hear remote the feeble pipe
Shrill sounding of the wakeful SNIPE,
And catch, receding from the view
His spots of black and rusty hue;
As, starting from his reedy fen,
He flies abrupt the approach of men,
And, with quick wing and zig-zag flight,
Dazzles the unpractised fowler's sight.

British Months.



THE SNIPE

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE,
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 604. SUPPLEMENT, NOVEMBER, 1841. { PRICE ONE PENNY.

A BRIEF HISTORY OF THE FINE ARTS. No III.

VICTORY; FROM A ROMAN PAINTING FOUND AT POMPEII.

A BRIEF HISTORY OF THE FINE ARTS. No. III.

ON THE KNOWLEDGE OF PAINTING POSSESSED BY THE ANCIENTS.

The softer canvass oft reposed the soul.
There gaily broke the sun-illumined cloud;
The lessening prospect, and the mountain blue,
Vanished in air; the precipice frowned, dire.
White, down the rock, the rushing torrent dashed;
The sun shone, trembling, o'er the distant main;
The tempest foamed, immense; the driving storm
Saddened the skies, and, from the doubling gloom,
On the scathed oak the ragged lightning fell:
In closing shades, and where the current strays,
With Peace, and Love, and innocence around,
Piped the lone shepherd to his feeding flock:
Round happy parents smiled their younger selves;
And friends conversed by death divided long.—THOMSON.

INTRODUCTION.

HAVING traced in our former Supplement the history of the art of Sculpture from the earliest periods to which our knowledge extends down to the present time, we now commence a similar undertaking with respect to the sister art of Painting, which being more extensive in the range of subjects which it presents to our imagination, depending upon illusion for some of its more striking effects, and employing principles abstractedly unreal, may be considered as presenting a class of difficulties to the artist, altogether different from those attending the practice of Sculpture, and in many respects more formidable and less likely to be overcome. Both arts, however, have the same basis, *i.e.*, FORM; and that basis is made the great and fundamental law of practice in all well regulated plans of study.

That painting is an art of extreme antiquity, there cannot be the slightest doubt; but to assign the country where it was first practised, or the circumstances attending its origin, is beyond the power of the historian. It has been justly observed that "the origin of any art, science, or discovery, is not so much owing to the particular accident which happened to the individual concerned, as to the intellectual adaptation of that individual to receive impressions of a peculiar nature, from the particular circumstance which occurred. Thus, whether music was invented by the man who listening to the sound of an anvil, instantly composed notes; or whether painting was discovered by the girl who watched the shadow of her lover, as he sat silent at the prospect of parting, and traced it on the wall as a memento of their mutual affection; whether it originated with Philocles in Egypt or Cleanthes in Corinth, or long before Egypt or Greece were habitable, the *principle* is the same. Without an inherent susceptibility to the impressions of sound, in preference to all other impressions, in the man, or an inherent susceptibility to the impressions of form equally intense in the girl, the intellectual faculties of either would never have been excited to compose notes, or to define figures. The art originated with the first man who was born with such acute sensibility to the beauty of form, colour, light, and shadow, as to be compelled to convey his thoughts by positive imitation."

SECTION I. EARLIEST RECORDS OF THE ART.

The cultivation of the arts is noticed in Scripture history as first appearing in the family of Cain; and within four centuries after the Flood we find that images of wood, stone, and metal were formed for idolatrous purposes. It is an ancient tradition that Terah, the father of Abraham, was a maker of images, but even at a period preceding by more than a century the call of Abraham, Greek and Egyptian tradition tells us of a colony planted at Sicyon by an Egyptian leader named *Ægialeus*, who brought with him the knowledge of sculpture and painting, and founded the earliest and purest school of Greek art. We find that the walls of Babylon were adorned with paintings of different species of animals, hunting expeditions, combats, &c. Semiramis was represented on horseback striking a leopard with a dart, and Ninus, her husband, wounding a lion. Allusion to this custom of the Babylonians of decorating their walls with paintings is found in the Sacred Writings. The prophet Ezekiel reproving the Jews for their idolatry says, "I went in, and saw, and behold every form of creeping things, and abominable beasts, and all the idols of the house of Israel, *pourtrayed* upon the wall round about." And in another place the same prophet adds, "She saw men pourtrayed upon the wall, the images of the Chaldeans pourtrayed in vermilion, girded with girdles upon their loins, exceeding in dyed attire upon their heads, all of them princes to look to, after the manner of the *Babylonians of Chaldea*." Ezek. xxiii. 14, 15.

The key which has at length been discovered to the decipherings of Egyptian hieroglyphics, promises to open to us much of the history of ancient art. It is now little doubted that although painting and sculpture existed in Egypt, and were probably at their highest condition eighteen centuries before the Christian era, yet, at a still earlier period, even in the ages of which we have hitherto had nothing more than a fabulous account, the arts were known in the ancient kingdom of Ethiopia. The existence and the exploits of Ethiopian monarchs are now found commemorated on the existing ruins of their cities, and correspond in a remarkable manner with the Jewish and Greek historians; and it is considered probable that the course of civilization descended from Ethiopia to Egypt. In the Bristol Museum may be seen some fine specimens of Ethiopian skill, in two nobly executed lions, on the shoulders of one of which is the name of Amenoph III., called Memnon by Greek historians. These were found by Lord Prudhoe among the remains of a magnificent city, situated eighty miles above Dongola, and supposed to have been the capital of Tirhakah mentioned in the Scriptures. The walls and temples of Thebes also, were decorated with paintings and sculpture, as early as the nineteenth century before Christ; and it is a remarkable fact that the succeeding efforts of Egyptian art never exceeded in merit the specimens which remain of those very early times.

To account for this circumstance it is conjectured that at the early period of which we are speaking the artists were allowed to follow their own feelings, and to commemorate in any way they liked, the actions of their employers, whereas it is well known that in later times, the arts in general were practised entirely in subserviency to the priesthood, and as by law every child was compelled to follow the profession of his father it is not to be wondered at that painting and sculpture degenerated, rather than progressed, among this singular people, and that in the time of the Ptolemies the former art was little better than an illuminated hieroglyphic. "The effect that the use of hieroglyphic painting, whether more or less near to writing, had upon the art of painting itself, was most disastrous. Those who were permitted to paint at all, were bound to make no improvement. The art was jealously kept for the adornment of hideous mummy cases, and sepulchral chambers, where the nearest approaches to what is properly painting were a sort of portraits, drawn upon the inner coffins, which were composed of folds of linen, prepared with a chalk ground, or basso relievos either coloured themselves, or imitated in flat colours upon the walls."—CALLCOTT.

The Egyptians can scarcely be said to have possessed the art of painting. The coloured subjects found on the walls of tombs and caverns are many of them merely coloured basso rellevos: the outline was drawn in red chalk and corrected; it was then cut out by the sculptor, and coloured by the painter in simple unbroken colours. Thus there are blue gods, yellow goddesses, and red men, with green and black draperies. The pigments were for the most part ochres; but the blues and greens appear to have been prepared from copper; the black was lamp-black, and the white a very fine lime. This distant approach to the art of painting seems to have been the mere result of a desire to distinguish the personages in their groups and to represent the colour of the nations, whether white, tawny, or black, with whom they were at warfare, or from whom they received homage. There is nothing in these groups deserving the name of a picture, since there is no knowledge of light and shadow, and no idea of either lineal or aërial perspective. Neither have we any record of an Egyptian painter in the annals of the art. Of the adornment of the mummy cases above referred to we give some further notice, for the benefit of such of our readers as may not have had an opportunity of examining them for themselves in the collection of the British Museum. The outer or wooden

case of a mummy is made, it is believed, of sycamore wood, sometimes cut out of a solid piece, sometimes composed of several pieces joined together by wooden pegs. It is generally of considerable thickness, and is coated on the outside with distemper colour, on which various emblematical devices are painted in a very inferior manner. The rude representation of the face which appears on the upper part, is sometimes painted red to denote that the body inclosed within is that of a male, sometimes yellow, for the female, and occasionally it is gilded. As soon as the upper portion of the mummy case is removed, the second or inner case appears. This is not composed of wood, but of at least ten or a dozen layers of linen firmly cemented together by a strong glue. This case is said to be originally formed on a rude model of the size and shape of the swathed body, and when the cement has become sufficiently dry, the model is taken away and the body introduced, the aperture being afterwards closed by an ingenious lacing, and the seam covered with a strip of cloth, glued or cemented over it. It is on this inner case that the largest portion of ornament is bestowed. "I have seen some," says a gentleman who had assisted in the opening of several mummies, "which must have occupied many days, perhaps many weeks, in the very elaborate outlining and colouring in water-colour or distemper; and finally varnishing or fixing the subject of this hieroglyph or allegory. The ground of this painting is of very fine and pure white, resembling stucco. The parts that are drawn on, and apparently outlined with a pen and then coloured, are the only parts that are afterwards varnished:—the blank parts of the white ground remain unvarnished, except where the varnish-brush has occasionally slipped beyond the outline, and there the white has become yellow. This white ground may be disturbed by a wetted finger, which is not the case with the varnished parts. Their varnish must have been of excellent quality, as it retains its transparency and gloss in a most extraordinary degree; in some instances appearing as if executed only a few days."

From all that can be gathered of Egyptian art, it does not appear that painting ever flourished in that country, or that other nations were much indebted to Egypt for their knowledge of the art. The only minute account we have of any peculiar works executed by tribes who may be supposed to have gained their knowledge of the arts from Egypt is that contained in the books of Moses; and this leads us to the consideration of the state of art among the Hebrews.

Section II. Notices of Hebrew Art.

Of the knowledge of the arts possessed by the Hebrew nation after their deliverance from the bondage of Egypt we have the most interesting intimations in the history of that people, and in the directions given them for the making of the ark and the tabernacle. "Moreover, thou shalt make the tabernacle with ten curtains of fine twined linen, and blue, and purple, and scarlet: with cherubims of cunning work shalt thou make them." (Exod. xxvi. 1.) "And the Lord spake unto Moses, saying, See, I have called by name Bezaleel the son of Uri, the son of Hur, of the tribe of Judah; and I have filled him with the spirit of God, in wisdom, and in understanding, and in knowledge, and in all manner of workmanship, to devise cunning works, to work in gold, and in silver, and in brass, and in cutting of stones, to set them, and in carving of timber, to work in all manner of workmanship." (Exod. xxxi. 1—5.) We find that in the preparation of the tabernacle they must have understood the weaving of fine linen; the preparing and dyeing of skins; the making of scarlet, red, blue, and purple dyes; the various modes of carving in wood; the casting and chiselling of metals, and the engraving of precious stones, and setting them according to the jeweller's art. Still there is no allusion made to the existence of painting as one of the fine arts among the Hebrews, and no proof that it was cultivated among them as such. This seems the more extraordinary, as it is hardly possible to suppose a people working in stone, silver, gold, and timber, and making rich embroidery on curtains and borders of garments, with various other clever devices, and to be destitute of the knowledge of painting. Indeed, there is every reason to believe that coloured designs must have been made to serve as patterns for the working of their tapestry, and it is difficult to assign any other reason for the neglect of the art than that which has been assigned by an eminent authority, *i. e.*, that the representation of any object by painting was not permitted to the Hebrews. This view of the subject seems countenanced by a passage in the book of Numbers, where pictures are named among the objects of the idolatrous worship of the Canaanites: "And the Lord spake unto Moses in the plains of Moab, by Jordan near Jericho, saying, Speak unto the children of Israel and say unto them, When ye are passed over Jordan, into the land of Canaan; then ye shall drive out all the inhabitants of the land from before you, and *destroy all their pictures*, and destroy all their molten images, and quite pluck down all their high places." (Numbers xxxiii. 50—52.)

Section III. Painting among the Phœnicians, Persians, Chinese, and Japanese.

With respect to the art of painting among the Phœnicians, Persians, and other Eastern nations, we are assured that it has been from the earliest ages, vile and wretched in the extreme. The Chinese, who have remained in nearly the same state, as to civilization, for a period of several thousand years, have from very early times made use of written signs for the purpose of retaining the memory of particular events, and among the elementary characters composing by their endless combinations the language of that people, it is not difficult to trace the rude forms of men and animals, houses, trees, hills, &c. The art, however, among them remained at a very low point, and their religion was not calculated to call forth their genius. They seem, until within a very recent period, to have contented themselves with only so much knowledge of painting as might enable them to decorate their beautiful porcelain, and their lacquered wares. Of the degree of dexterity to which they had attained Mrs. Callcott thus speaks:—"The Chinese had certainly attained to great manual dexterity, and the power of copying servilely whatever inanimate subjects were before them; and they had discovered the method of extracting colours from metallic substances, capable of bearing the furnace, as well as those of more obvious use in the chalks and earths of their country; besides some of the finest varnishes in existence. We ought not to marvel that they did not attain, in their painting, to common, much less to ideal beauty, when we reflect on the general character of form in their own nation or their Tartar conquerors, which is very far below that of the Indians and their western neighbours. And we have, perhaps, no right to expect better human shapes than that of the portly mandarin and his crimp-footed lady upon their plates and dishes. But their animals, whether painted, modelled in clay, or cast in metal, are less distorted than their men: and as to perspective, linear or aërial, they seem to have no sense of either. In flowers and birds, their pencilling is delicate, and often true to admiration; but even in these objects, except in treatises on botany or ornithology, their peculiar taste breaks out in monstrous combinations of leaves and flowers that never grew in the same soil, and of beaks and wings that were never hatched in the same nest." Within a recent period a change has taken place in Chinese art, and proofs have been given of an attempt to imitate Europeans in their superior skill and knowledge.

Among the more imaginative people of India, with their florid religion and exaggerated poetry, we might reasonably look for greater advancement in the art, yet no specimen of considerable antiquity has been preserved to show what was the former state of painting in that country, and as to the modern productions of India, as conveyed to us in the designs on their tapestry, shawls, and carpets, they have become celebrated on account of the excellence of the materials and not on account of the purity of the design. Of the just proportions of the human figure the artists of that country are totally ignorant, and their representations of the lower animals are not always clearly distinguishable, the one from the other.

The Japanese appear to have attained considerable dexterity in many of the arts; and even in painting the old Japan figures more nearly approach to beauty of style than is the case with Chinese productions of a similar kind.

Section IV. On Etruscan Art.

We have now to consider the state of art among a most interesting people, whose origin and history are involved in obscurity, and whose early acquaintance with science has excited much astonishment among those who have searched the most deeply into the subject, and have traced their progress by means of the beautiful and curious specimens of their works still extant. These are the Etruscans, respecting whom, most authors agree that they were not the aboriginal inhabitants of the land of Etruria, yet none are decided where

they came from, or who they were. The early works of the Etruscans are not superior to those of other nations, but, either through intercourse with Greece, or through the original genius of the people, they had attained to considerable eminence in the arts before Rome was founded, for Pliny tells us that there were beautiful pictures at Ardea and Lanuvium, which were older than Rome. According to Winkelman the Etruscans were advanced in art even before the Greeks, and it was a tradition of the remote ages, that Dædalus flying from Minos settled in Etruria and first sowed the seeds of design. Heyne also says that before Rome was built, casting of metal, sculpture, and painting existed in Etruria anterior to any connection of the Etruscans with Greece.

Very few relics of importance, such as should give evidence of their talents in art, had been discovered of this ancient people, until 1760 when tombs decorated with various designs were brought to light at Tarquinia, the capital city of ancient Etruria. Public attention does not appear to have been greatly excited by this event till the commencement of the present century, when private collections of Etruscan objects began to be formed and valued, and when fac-similes of pictorial decorations of tombs were publicly exhibited in London, with the monumental statues themselves. Mrs. Hamilton Grey, in her interesting work on Etruria, describes her visit to this exhibition, previously to her departure for Italy, and expresses the astonishment which was naturally felt at the sight of objects of such size and grandeur as the colossal statues then before her, and which had lain undisturbed throughout so many ages. But as it is with the paintings of Etruria we are now concerned, we shall content ourselves with quoting her remarks on those which formed part of the same exhibition. "Having seen these tombs, we were conducted up stairs into other small dark chambers, I think four in number but all separate from each other, and lighted in the same manner. They were without sarcophagus or ornament, but had described upon the walls a series of the most spirited and lively coloured paintings. In one was a Triclinium, a man and woman richly dressed being seated together as if presiding over some grand entertainment, with piles of vases and tazze near them, dancers, and players upon instruments on each side, and servants waiting to carry round viands and wine. In another chamber was a chariot race, in another, horses caparisoned, and dancers, in another, a fight, all expressed with a grouping and a spirit which was Greek, and a mannerism which was Egyptian." On a subsequent visit to Tarquinia itself, Mrs. Grey had an opportunity of inspecting many similar works. She was informed that the necropolis or burying-place of that city was computed to extend over sixteen square miles, and judging from the two thousand tombs which have been opened of late years, the number in all cannot be less than two millions! This is sufficient to give us an idea of the dense population of ancient Etruria, especially as this necropolis stands not alone, but is surrounded on all sides by cemeteries scarcely inferior to itself, one of which, (that of *Castel d'Asso*,) Mrs. Grey speaks of as having probably been the Westminster Abbey of Central Etruria. Of the great number of tombs which have of late years been excavated at Tarquinia, only nine are preserved for the inspection of the curious. One of the most interesting though by no means the most important is the *Camera del Morto*, as it has been called, in allusion to the subject which decorates its walls. "It exhibits," says our authoress, "an affecting scene of domestic manners, the preparation of a dead body for its last resting-place, and the piety of the daughter and friends of the deceased. The paintings remain only on three walls of this chamber; those on the side of the entrance, which consisted of fabulous animals, being obliterated. On entering we were struck with the graceful figure of a girl clad in a mantle and tunic, having jewelled ears, and pointed buskins, with hair dishevelled, and in an attitude of grief, who performed the last sad offices for an aged man. He, venerable from his white hair and beard, is laid out on a bed of state, ornamented with purple, and covered with a tunic which reaches midway down the leg, and is joined to a hood like that of modern friars coming over his head, which rests on a double pillow. To watch the last moments, as well as to close the eyes and mouth, to wash the body, and to anoint it, was always the child's office. And here she is assisted by a son, or some very near relation, who touches the knees of the corpse with his left hand, his right being raised to his head, with the expression of lively sorrow, while he bids his last adieu. A fragment of an inscription is all that remains. The usage of the Etruscans to honour their dead with music and dancing is not here forgotten. The very chamber of death is not without this somewhat incongruous accompaniment; while on the middle wall a dancer is introduced who, to the sound of the flute, pours out a libation beside a large vase ornamented with fillets, placed in the centre of the picture; and two more dancers are represented, one of whom is emptying a tazza."

Another tomb exhibited a very different scene; a luxurious and splendid entertainment formed the inappropriate subject for the decoration of the chamber of the dead. We have not space for the very interesting and elaborate description of this and the other tombs, as given by Mrs. Grey, but the complicated nature of the representations on the walls give us no mean opinion of the school of Etruscan artists, as it regards the design and grouping of their subjects. The painting in the tomb we have alluded to, which is called the *Grotta del Triclinio*, fully displays the Etruscan magnificence in dress and furniture. Splendid festal dresses adorn the guests, the tables and couches have party-coloured coverings of great richness and beauty, vessels and cups of various forms load a sort of buffet at the side of the festal chamber, dancing-girls are present habited in dresses of the most splendid material, embroidered with minute stars, and adorned with party-coloured garnitures, and every appearance of luxury attends this funeral entertainment. A remarkable frieze of figures drawn in a very spirited manner but not shaded, and with colours scarcely distinguishable, is one of the objects of interest in the tomb called the *Grotta del Cardinale*. It consists of a procession of souls to judgment, and one of the groups evidently represents the state of a person, who, during his life had been of a doubtful character, much both of good and evil being attributed to him. He is dragged in a car before the judge by two winged genii, the one good, and the other evil, who are contending for the exclusive possession of him. In the eagerness of dispute the car stops. They cannot draw it on, but remain stationary, to mark the uncertain character of the deceased. The genii in this procession all have wings, while the souls are without them: the evil genii are distinguished from the good by being painted black. Mrs. Grey justly remarks that a visit to the tombs of heathenism brings home to us, with peculiar force, the consolations of Christianity. "To the uninformed Etruscan the passage from the seen to the unseen world was dark and uncertain; he tried to dispel its gloom by the representation of festal gaiety and jocund revelry, by which he beguiled himself with the hope that the state of the departed soul was accurately represented. But that his efforts were unavailing to dispel doubts and care, is proved by the pictures in this and in the following tomb. Here we have the powers of good and evil, contending for one who knew nothing of an Almighty Mediator; and there we have the doleful representation of youth, beauty, and dignity, a prey to fiends, with no friendly power to pluck them from their grasp. How comfortable, nay, how beautiful, do the most hackneyed expressions in our churchyards seem, after a visit to the tombs of these men."

The above account of Etruscan paintings will be sufficient for our present purpose, and we may conclude by saying that the specimens left us of their art are many of them extremely beautiful in taste, design, expression, and drapery; but we have little opportunity of judging of the colouring of the Etruscan school, as fresco, stucco, or distemper (the modes employed by this people) are adapted neither for depth nor for tone. The painted vases of Etruria are extremely beautiful, and the principles of design and proportion in them, are nearly the same as in the finest works of Greek sculpture.

Section V. Ancient Grecian Painting.

For our knowledge of the early state of art among the Greeks we are greatly indebted to Pliny, although that author was undoubtedly mistaken in attributing the origin of painting to Greece. Of the progressive steps of the art in that favoured land we can judge only by inference, for no production of the Grecian pencil remains to aid our judgment, and the opinions of ancient critics are not always satisfactory. We have, it is true, a regular and systematic account of early painting, but it has been objected that the progressive advances follow each other in an order too artificial to represent faithfully the alternate failure and success, which usually attends the course of genius. The progress of the Greeks is said to be as follows. At first the mere outline was traced with a *stylus* or point. After a certain

time, the early artists, having drawn an outline ventured to colour it inside with black, as we do our profile figures. These paintings were called *skiagrams*, from two words signifying "shade" and "to draw," and the artists who could thus fill up a face or figure with black were looked upon as eminent men. After a time the method of producing effect by outlines only began to be understood, and this outline without shade was called a *monogram*, signifying "only to draw." Next came the genius who was bold enough to venture upon *positive colour*. His name was Cleophantus of Corinth, and his mode a very simple one. He ground up a red brick, and used it in a first attempt at imitating the colour of human flesh. On his account the Greeks claimed the invention of colour, although the Chaldeans and the Egyptians had made paintings on their walls and tombs nearly a thousand years before. This discovery was called *monochrom*, or single-coloured: one colour having been employed, it naturally followed that others were soon obtained from different earths; so that *polychrom*, or many-coloured, became the title for the new style of art. We cannot here dwell on the nature of distemper, and encaustic painting, as practised by the Greeks, (for the latter subject we may refer our readers to a recent number of the *Saturday Magazine*,) but must proceed to notice the principal artists and their productions from the earliest times.

We have already mentioned the artist to whom the invention of outline is ascribed by Pliny. The names of Ardices of Corinth, and of Telephanes of Sicyon, are associated with that of Cleophantus, but of their performances we have little notice, except an accusation of Ælian, applicable, no doubt, to this early period, that the artists were obliged to write underneath their wretched designs, "This is a bull, this is a house, this is a tree." Among the monochromatists or single-colour painters, Cimon the Cleonian appears to have far exceeded his fellows. He is said to have invented fore-shortening, and drawing objects at an angle. He varied the characters and forms of heads so as to make them looking up, or looking down, or turning aside; he also improved the draperies by giving them undulations and folds. Another great man of this period, was Polygnotus, the Greek national and monumental painter, who seems to have possessed a real love for his art, and to have been above all considerations of gain. The hall at Delphi and the portico at Athens were painted gratuitously by him, and his disinterested conduct at length met with its proper acknowledgment in a decree of the Amphictyonic council, that he was henceforward to be maintained at the expense of Greece. From his time improvement was carried forward for half a century by Mycon, chiefly remarkable for his skill in representing horses; by the minute and accurate Dionysius of Colophon; by Aglaophon, famed for boldness and energy; by Evenor, the father of Parrhasius; and by Apollodorus the Athenian, who invented or perfected the knowledge of light and shade. Zeuxis improved his style so much by this knowledge as to excite the envy of Apollodorus. According to Pliny, "the doors which Apollodorus opened Zeuxis boldly marched through, daring everything the pencil could do, and carrying it to the greatest glory." This was about the 95th Olympiad. To Zeuxis is attributed the merit of introducing simplicity of composition, relying rather upon the perfection of a single figure to concentrate the interest, than upon the crowd of objects introduced by the earlier masters. He was equally simple in his colouring, using two, or at most four, pigments. After this artist came Parrhasius, who seems to have surpassed him in colouring, but whose works were many of them degraded by indecency. Timanthes became celebrated on account of his representation of the sacrifice of Iphigenia in Aulis, which was full of touching expression. In covering the face of the father who was compelled to attend the sacrifice of his daughter, he appealed more strongly to the feelings, than if he had attempted to depict the grief-stricken countenance of the unhappy parent. Following Timanthes, were Eupompus, renowned for the splendour of his style, Aristides, the great master of expression, Pamphilus, eminent for natural feeling and truth, and Apelles, whose name is synonymous with perfection of finish.

The age of Apelles witnessed both the glory and the decay of ancient art. This refined and accomplished artist was an eminent example of persevering industry, and not only painted assiduously, but wrote copiously on his art. His treatises were extant about the year 1100 of our era, and as they were probably illustrated with designs, their loss is much to be regretted. The leading features of his style were beauty and grace, and in these respects he was followed by the greatest painters of his day. Apelles is said to have been a very generous man, and one who readily acknowledged any points of superiority in others. Pliny has many anecdotes respecting this painter, from which we may select the following. Protogenes, also an excellent artist, was residing at Rhodes, and Apelles sailed to that island to pay him a visit. On his arrival he was disappointed to find the artist absent from home. An old woman showed him into the painting room, where he found a tablet with its wax ground ready for a picture, and taking up a brush, he drew an exquisite line in colour down the tablet. After his departure, Protogenes returned and was shown what had happened, and on contemplating the beauty of the form, he said none other but Apelles could have executed so perfect a work. He then took a brush, and drew another still more refined, saying, "If the stranger call again, shew him this, and say that this is what he is seeking." Apelles returned, and blushing to see himself outdone, took a brush, and drew a third, the refinement of which it was impossible to exceed. When Protogenes saw this, he confessed that he could carry the line no further. This tablet was preserved long after the death of both artists; and after the conquest of the Romans it was preserved in the palace of the Cæsars on the Palatine Hill. Pliny speaks of it as superior to all that could be found in the finest works though consisting of three lines only. What these lines were, it is now impossible to say, though Michel Angelo was of opinion that they must have represented the contour of some part of the body. The tablet was unfortunately destroyed at the same time with the palace where it was deposited.

Apelles has been called the court-favourite of antiquity, since by his pleasing tact in portrait painting, he was enabled to seize on the most agreeable expression of any sitter's face, and to conceal, or to turn to advantage, its peculiar defects. This was the secret, doubtless, of his great popularity. "There is no gratitude," says Mr. Hazlitt, "equal to the gratitude of being successfully painted. Kings bow to the unknown power of having their momentary expressions observed, seized, transferred, and fixed for ages, and whilst colours and canvass last, carried on, for the admiration of a distant age, when the existing one is past and forgotten. What can equal the gratitude of a woman to have her beauty preserved, while she is in her bloom, for the admiration of her children when age has shrivelled her form, or misfortune destroyed her happiness? The world may be elevated, excited, roused, by the commemoration of the great deeds of ancestors or heroes; but no sympathy is ever excited, and no personal vanities are ever so happily gratified by any class of painters, as by the great portrait-painter. The degree of imagination required is not of that irresistible kind which forces him to leave the model before him, using it only to realise his own burning conceptions, so that all likeness of the individual is lost; he requires no more than to retain in his mind the best expression of the individual before him to identify it on canvass. But it must be exactly like, or it is nothing. After the likeness is completed, the sitter will have no objection to the highest degree of embellishment. There the great portrait-painter shews the degree of *fancy* wanted, and he that embellishes most, without losing resemblance, will be the most welcomed, as Apelles was, by the world."

The greatest work of Apelles seems to have been his Venus Anadyomene, but being painted on wood it was destroyed by insects in the time of Augustus. He began another, but died before its completion. It is mentioned as a proof of the reverence entertained for his talents, that although this painting was finished as far as the bust, and the remaining contours were also completed, no one would venture to touch the picture for the final stages of the figure.

Of the other painters of this celebrated period, Asclepiodorus was renowned for proportion, Nicomachus for skill of hand, and Theon for wild conceptions. Pansias and Euphranor appear to have been the gr atest encaustic painters. The former was celebrated for his skill in foreshortening, as we learn from Pliny's description of a bull painted by him, which appeared to project beyond the tablet. Metrodorus, Nicias, and Timomachus are the last we shall mention among the celebrated men of the finest period of Greek painting.

The progress and decline of Grecian art which took place at the time we are now arrived at, has been already traced in our Supplement on Sculpture. We need therefore only allude to the probable causes why painting was not at

any period so completely national in Greece as the sister art, The general taste in Painting was not, as in Sculpture. formed and established by public and venerated monuments, and consequently the wholesome restraints of public opinion could not operate in an equal degree. The ambition and the talents of painters were not excited and directed by the nationality of their performances, nor was the standard of excellence formed until the severe purity of ancient taste had suffered a sad decline. Painting appears to have been too soon abandoned to the caprice of private patronage and judgment, and could never compete with Sculpture, whose labours were publicly dedicated to the renown of the good, the learned, and the brave. One hundred and sixty-nine sculptors are mentioned by Pausanias, while he has only recorded the names of fifteen painters; and after three centuries of spoliation he found in Greece three thousand statues, not one of them a copy, while he describes only one hundred and thirty-one paintings.

Grecian art has been divided into three periods; the first being that previous to the time of Pericles; the second that of Pericles himself, considered the highest and purest in painting, sculpture, and architecture; the third, or epoch of Alexander, the most refined, but prophetic of the corruption which followed. After this last period came the subjugation of the Greeks by the Roman power, and the seizure of their noblest works to adorn the capital of Italy.

Section VI. Ancient Roman Painting.

The time at which painting began to be employed for the purposes of external and internal decoration in Rome, seems to have been that when, during the reign of the Tarquins, Etruria exercised so much influence over the arts of that city. But the first recorded specimen of Roman art was not executed until near two hundred years later, when one of the great and noble family of the Fabii painted the Temple of Health in such a manner, that the work was highly esteemed even after the introduction of Greek pictures. On account of this performance, the family of Fabii took the surname of Pictor. The painting was destroyed by fire, with the temple itself, in the reign of Claudius Cæsar. About sixty years after the time of Fabius Pictor, lived a poet and tragedian, named Pacuvius, who is named as the great painter in the time of the republic. He painted the Temple of Hercules in the cattle market in Rome, and the pictures are said to have given dignity to the art itself.

A singular use made of painting among the Romans is referred to in Mrs. Callcott's *Essays* on the art. The inordinate love of military fame by which they were actuated, found a mode of gratification in this charming art; and it appears, that Valerius Maximus Messala was the first to adopt a practice of exhibiting pictures of his own actions which became afterwards pretty common, though condemned by some of the chief men of the republic. Messala caused a picture to be hung up in the Porta, a pubic place, representing the battle of Messana, where he had vanquished both the Carthaginians and Hiero of Syracuse, who had joined his former enemies to resist the invasion of his country by the Romans. By the means of this picture, Messala kept himself before the eyes of the people in the situation best calculated to further his views whenever he should be a candidate for the magistracy. This picture told the story of his achievement to the best advantage, and was likely to engage the affections of the people on his behalf. These exhibitions were sometimes productive of injurious effects. The anger of Scipio Africanus was excited against his brother, Lucius Scipio, because the latter exhibited a picture of the battle of Sardis, which won him the title of Asiaticus, but in which his nephew, the son of Africanus, was taken prisoner. Scipio Emilianus, again, was highly offended at the display of a picture of the taking of Carthage, exhibited in the market place by Lucius Hostilius Mancinus. It appears that Mancinus was the first to enter Carthage on the taking of the city, and on his return to Rome, being desirous of the consulship, he had a picture painted, representing the strong situation of the town, with its fortifications, and all the machines employed in the attack and defence, besides the actions of the besiegers, in which, care was taken, that those of Mancinus should be most conspicuous. This he hung up in the Forum, and, seating himself by it, he explained to the people all the parts of the picture, particularly those in which he was concerned, in such a manner, that he won their good will, and gained the consulship at the very next election. Paintings were employed in the same way by lawyers, in their pleadings, and became the means of unduly swaying the opinions of the people. They were also carried about by persons who had suffered any loss or misfortune, to excite the sympathy of the benevolent. Though these representations were probably rough in their style of execution, there must have been enough of individual likeness, and of correct grouping, to enable the people to recognise their meaning, and this argues considerable skill on the part of the painter.

From the time of the consul Mummius foreign pictures were daily brought to Rome, and the public buildings of the city were hung with the works of Aristides, Apelles, and all the most famed artists of Greece. In the Temple of Peace was placed the most valued of all the works of Protogenes, *i.e.*, the hunter Jalysus with his dogs and game. This picture was at Rhodes, where the artist lived, when Demetrius laid siege to the town, and it is said that he abstained from an attack which could not have failed of being successful, lest in the confusion of the battle, the picture should receive injury. The Cyclops of Timanthes, and the Scylla of Nichomachus, were also deposited in the Temple of Peace. Some of the most precious works of Zeuxis adorned the Temple of Concord and the private villas in Rome.

The influx of beautiful statues and pictures at Rome during this period, was doubtless the cause of the partial revival of taste, and of the establishment of the numerous schools which sprung up throughout Italy. Yet we do not read of any artist whose name became illustrious. Ludius, of the time of Augustus, is spoken of as the first who decorated the walls of houses with representations of rural scenery; Aurelius, Cornelius Pinus and Actius Priscus were employed by Vespasian to decorate some temples which he rebuilt; but their pictures were of an inferior character, and have few pretensions to excellence. Great encouragement was given to artists in the time of the magnificent Hadrian. But with this emperor and the Antonines the prosperity of the arts ceased. Pliny tells us of an artist of Prætorian rank, Alterius Labeo, who in his time was very skilful in small works of painting, probably miniatures; the same author mentions among the last of ancient Italian painters, Turpilius, a noble Venetian, who painted at Verona, in the first century of our era. It was during this first century that the great catastrophe occasioned by the eruption of Mount Vesuvius took place, when the cities of Pompeii and Herculaneum were buried under vast showers of stones, ashes, and lava. Pompeii remained buried for sixteen hundred and seventy-six years. The first indications of ruins were observed in 1689, but the excavations did not commence till 1755. Such works of art as were not portable, and were therefore necessarily left behind by the flying inhabitants, still remain as fresh as at the day of their disappearance, and the discovery of these cities has therefore greatly enlightened us with respect to Roman arts and customs. "Every one must be struck," says Mrs. Callcott, "with the great disparity between the bronzes and marbles, and the pictures of Pompeii. Some of the bronze figures, and most of the furniture of that metal, are exquisite in taste and execution, and many of the marbles are not far behind them. But the pictures are of a very inferior character, generally speaking. Single figures there are of great beauty, and some arabesques elegantly designed; but the groups are for the most part more like sculpture than painting; and the few landscapes are little better than those of the Chinese. To account for this in some measure, I would suggest, that the pictures we have found are merely the decorations of small private houses, and that they must have been executed late in the decline of art, because the great earthquake which had destroyed the temples of Pompeii, but a few years before that eruption of the mountain which buried the town, must have shaken the stucco from the walls, and with it whatever specimens of art of a better time might have then existed. Besides, the inhabitants of Pompeii had, most of them, time to escape with their most precious moveables. Now if any of the residents at that small provincial town possessed any Greek pictures or others of value, they were painted on light wooden panels (larch or sycamore) and were easily removed, so that if not saved, they must have been consumed in the fields by the fiery showers that destroyed more persons without the gates of the town than within them. Hence I cannot think that the pictures of Pompeii furnish a fair criterion by which to judge of the real nature of antique painting, any more than the arabesques that have been found in the Roman baths and subterranean chambers of the palaces, which we can-

not suppose to have been the places where the choicest works of arts were placed."

Premising thus much, concerning the impropriety of judging of the Roman schools of painting in general by the specimens discovered at Pompeii, we proceed to notice some of the existing remains of art in that long buried city. Examples are found, in great number, of the walls of apartments being painted in a fanciful manner, and sometimes the method employed by the artist is very singular. The picture, though not in an ill state of preservation, and though to be seen at a convenient distance, is quite undistinguishable on a nearer approach. Sir W. Gell describes a painting of this kind in a chamber near the entrance of the Chalcidium. At a certain distance a town, a tent, and something like a marriage ceremony, might be perceived; but which vanished into an assemblage of apparently unmeaning blots, so as to entirely elude the skill of the artist who was endeavouring to copy it at the distance of three or four feet. Another picture of the same kind was visible in the chamber of the Perseus and Andromeda. An entire farm-yard, with animals, a fountain, and a beggar, seemed to invite the antiquary to a closer inspection, which only produced confusion and disappointment, and proved that the picture could not be copied, except by a painter possessing the skill and touch of the original artist. A house of the minor class, yet remarkable for the paintings with which it was adorned, was visited by Mayois in 1812. He copied two of them, and shortly after that time the plaster detaching itself from the wall, they fell, and were destroyed. The subject of one of them was taken from the Odyssey, and represents Ulysses and Circe, at the moment when the hero, having drunk of the charmed cup, draws his sword and advances to avenge his companions. The goddess, terrified, makes her submission at once, as described by Homer, while her two attendants fly in alarm. Circe uses the very gesture of supplication so constantly described by Homer, as she sinks on her knees, extending one hand to clasp the knees of Ulysses, with the other endeavouring to touch his beard. In a house called *Casa Carolina*, because it was excavated in the presence of Queen Caroline, the paintings were found in good preservation, though they have rapidly decayed since that period. Two of them are engraved in Sir W. Gell's work. One of them is explained to be either Diana and Endymion, or Venus and Adonis. A youth, whose head is encircled with rays of light, is sitting down holding two spears; a female figure of great beauty is approaching him, and between them is Hymen with his torch and palm-branch. The female is rather scantily dressed, but richly ornamented with ear-rings, necklace, armlets, and bracelets. The other picture represents Perseus and Andromeda after the hero has slain the monster. He holds behind him something like a skull, which is probably intended for Medusa's head, and his double-pointed sword lies beside him on the ground. Andromeda is in full costume, and wears a white tunic, with a blue peplum or large wrapper.

The house of the female dancers in the street of Herculaneum, is remarkable for the beauty of its paintings. Among them are four elegant figures of female dancers, from which the house receives its name. Another represents a figure reposing on the borders of a clear lake, surrounded by villas and palaces, on the bosom of which a flock of ducks and wild fowl are swimming. The *Fullonica*, or scouring-house, had its walls adorned by a very interesting series of paintings, where the various processes connected with fulling and scouring cloth are admirably illustrated. The house of the tragic poet, and the houses of the great and little fountains, excited a great sensation at the time of their discovery, not so much for their extent, as on account of the beauty and richness of their decorations. In the former dwelling was found a painting that has been esteemed one of the most beautiful specimens of ancient art that has descended to modern times. The subject is Achilles delivering Briseis to the heralds. It is thus described by Sir W. Gell:—"The scene seems to take place in the tent of Achilles, who sits in the centre. Patroclus, with his back towards the spectator, and with a skin of deeper red, leads in from the left the lovely Briseis in a long and floating veil of apple-green. Her face is beautiful, and, not to dwell upon the archness of her eye, it is evident that the pouting of her ruby lip was imagined by the painter as one of her most bewitching attributes. Achilles presents the fair one to the heralds on the right; and his attitude, his manly beauty, and the magnificent expression of his countenance, are inimitable. The tent seems to be divided by a drapery about breast-high, and of a sort of dark bluish-green, like the tent itself. Behind this stand several warriors, the golden shield of one of whom, whether intentionally or not on the part of the painter, forms a sort of glory round the head of the principal hero. It is probably the copy of one of the most celebrated pictures of antiquity. When first discovered, the colours were fresh, and the flesh particularly had the transparency of Titian. It suffered much and unavoidably, during the excavation, and something from the means taken to preserve it, when a committee of persons qualified to judge, had decided that the wall on which it was painted was not in a state to admit of its removal in safety. At length, after an exposure of more than two years, it was thought better to attempt to transport it to the studii at Naples, than to suffer it entirely to disappear from the wall. It was accordingly removed with success in the summer of 1826, and it is hoped that some remains of it may exist to posterity."

In the same house is a representation on a white ground of the combat between the Greeks and Amazons. Some of the female warriors are in chariots, some on horses, and they are armed with bows, shields, and battle-axes. They are clothed in blue, green, and purple draperies, and are represented in violent action. The men are distinguished by wearing helmets, while the women have the head bare. These figures are more remarkable for their spirited composition, than for accuracy of drawing. A very beautiful production ornaments a chamber in this house, called, from the subject of the picture, the chamber of Leda. Pictures of Venus and Cupid, of Ariadne, and of the sacrifice of Iphigenia, also serve to increase the interest attached to this dwelling.

At the north-east angle of the Forum, stands an edifice called the Pantheon, which contains several paintings worthy of notice. The designs are well composed and the colours brilliant. One of the most interesting is that of a female artist, holding in one hand an oval white palette, apparently of silver, in the other, brushes tinged with several colours. Her five fingers appear to grasp the palette, through as many holes perforated in the metal. The paintings, for the most part, consist of architectural compositions of long aërial columns, vistas seen through doorways, showing the ornamented ceilings, a variety of figures and borders of flowers generally painted in dazzling colours, among which, bright vermilion, jet black, deep crimson, azure blue, and bright yellow, prevail to form the ground. A variety of mixed tints are added to these, which consist principally of light greys, pink, purple, and green. In the centre of compartments formed by the arabesques, historical subjects are painted. The subject of one is the return of Ulysses in disguise to Ithaca, and his meeting with Penelope, as recorded in the nineteenth book of the Odyssey. The picture represents the queen inquiring of the supposed mendicant stranger for tidings of Ulysses. She is clothed in a violet coloured robe, and a white mantle, or perhaps a species of veil. She holds the materials for spinning in her hands. Ulysses has a white tunic, and a yellow chlaymis or pallium. The attendant Eurynome is also represented. The distinguishing characteristic of this painting is said to be its total absence of affectation. There is not that strong effect of light and shadow employed in modern painting, for though the picture is shaded it is only to a depth that might exist in the open air. The following remarks of Sir W. Gell, made in connection with the painting we refer to, are interesting and important:—"It is of consequence to preserve everything which can convey to us the conceptions which the ancients themselves formed on the subjects connected with poetry and history, before dress and manners had undergone that complete change which took place soon after the general introduction of Christianity. By collecting the materials which Pompeii and Herculaneum have already furnished, and may hereafter supply, we shall probably, ere long, have the means of forming editions of the writers of antiquity, and decorating our classical and mythological dictionaries with figures and illustrations which the ancients themselves might have approved, but which have hitherto been attempted in vain."

In the house of the Quæstor, otherwise called the house of the Dioscuri, or sons of Jupiter, there are some excellent paintings of figures, among which we may notice that of Jupiter seated on his throne, and crowned by Victory, attired in her usual flying drapery and with S.C. on her shield. The figure represented in our frontispiece also represents Victory, but differs materially from that of which we have just spoken. It is conjectured that the

genius of Rome may possibly be intended by this elegant figure, as the globe in her hand may be understood to signify. The trophy in her left hand proves the goddess to be of Roman, and not of Grecian invention. The globe does not bear any representation of oceans or continents, but is merely marked with a few indistinct touches.

From the preceding account it will be evident, that although the faults of the paintings at Pompeii taken as a whole may be numerous, as it respects accuracy of perspective and other important particulars, still there is sufficient beauty in many of the groups and single figures, to make these remains of ancient art important to those who wish to study the grouping and composition of the ancients, and to render them worthy of their most attentive consideration.

Mrs. Callcott mentions the discovery of two very beautiful specimens of antique painting, found in a vineyard near Rome in 1823, which seem to corroborate her opinion that the pictures scattered through the Italian provinces were generally inferior to those belonging to Rome itself or the immediate neighbourhood. One of these was the half figure of a boy, with a double flute; broad in colour and effect, and round and fine in form, somewhat resembling one of the Venetian frescoes, particularly those of Paul Veronese. The other was a Ganymede, very beautiful in form, and remarkable for the effect of light and shadow. The light in this painting is described as falling principally on the body of Ganymede in the centre, and illuminating the blue sky on the left; but a low light stone altar is placed on the right to balance it. Over the altar an eagle with outstretched wings is dark, and the shadow is continued behind the lower part of the figure of the boy by a purple mantle.

Section VII. Materials employed in the Paintings of the Ancients.

The ancients painted principally upon wood, of which we find the larch, the cornel, the cedar, the cypress, the holly, the sycamore, and the box-tree, mentioned by ancient writers. The boards or tablets were prepared with a thin ground of chalk and size of some kind. Linen cloth or canvass was also employed to paint upon, but we have no direct evidence of its use before the reign of Nero. Parchment, ivory, and plaster were the other materials. With respect to the pigments employed by the ancients, the greater number are employed still. It is commonly believed that only four colours were known in the time of Apelles, and that these were white and black, and red and yellow ochres. This belief is founded on an expression in Pliny to that effect, but when we find Pliny himself describing the Venus Anadyomene of Apelles, as rising from a green or azure ocean, under a bright blue sky, we are at once undeceived on this point. Other authors lead us to the conclusion, that so many and so beautiful were the ancient pigments, that it is doubtful whether modern science has given us any advantage in this respect. In the Egyptian catacombs, long before the time of the great painters of Greece, blues and greens are as commonly found as yellows and reds. And we know that in the time of Moses, scarlet, red, blue, and purple, were the colours employed in the furniture of the ark of the covenant, and the vestments of the priests.

Of the white colouring matters, the ceruse, or white lead of modern painters, was known to the ancients, but could not have been so valuable to them, unless they had some oils, or vehicles of that nature, wherewith to apply it, for it turns black when used in water or fresco painting. A natural earth from Egypt, Crete, and Cyrene, was much valued; a very fine pigment was also made of chalk ground with the white glass of which rings and other ornaments were made, and therefore called *annulare*. The finest description of lime was used, repeatedly washed, and beaten, and then formed into cakes which were dried in the sun.

The Romans divided colours into two classes, florid and grave, and we may adopt this division in speaking of the ancient pigments. The florid colours were the more valuable, and appear to have been cinnabar, minium, armenium, purpurissum, indicum, ostrum, chrysocolla.

Vermilion, called in its rough state cinnabar, is the most brilliant and valuable red, and appears to have had something of a sacred character in the estimation of the Romans, since the first duty of a censor, in entering upon his office, was to paint Jupiter's face with vermilion, and the faces of all the gods were adorned in a similar manner. Theophrastus tells us, that Callias, an Athenian, calcined it, and brought it to its very fine colour, minium, or red lead, is often confounded with native cinnabar, but is decidedly inferior in quality, and blackens on exposure to light and air, unless secured by strong varnishes. Armenium, purpurissum, indicum, or indigo, and ostrum, were different shades of blue, the first being the splendid colour now called ultra-marine. Theophrastus says that one of the kings of Egypt invented the method of making the beautiful Armenian blue, so precious, that kings sent presents of it to each other. The lapis lazuli, from which the colour is obtained, is found in Siberia and on the borders of Persia, as well as in China, where the preparation of the colour has long been known. Some of the ancient imitations of this beautiful colour were composed of earth, boiled with woad, or indigo. Several lumps of a deep blue substance, found in the baths of Titus, were analyzed by Sir Humphrey Davy, and were found to be a frit made by means of soda, and coloured with oxide of copper. Powdered and mixed with chalk, they produced tints exactly corresponding with the blues still preserved on the walls of the same baths. Indigo was introduced into the West from India, not long before Pliny's time, and was immediately adopted for shadows and strong lines. All the ancient greens examined by Davy, proved to be combinations of copper, and there is every reason to believe that the native chrysocolla was carbonate of copper. The name of chrysocolla (gold-glue), was probably derived from the green powder used by goldsmiths as solder, into which copper entered.

The austere colours were more numerous than the florid. Of the red earths, Sinopis, brought from the city of Sinope in Pontus, was much esteemed. The red grounds at Pompeii and elsewhere were made with this colour. It is now sold in our shops as Armenian bole, and is used in some manufactures. There was a red colour used by the ancients especially to represent blood, and from their account of it, they were evidently ignorant of its origin. They described it as produced by the mixed blood of elephants and dragons in their deadly fights. This is probably the same substance still called dragon's blood, the resin of the *Dracæna draco* of Linnæus. Sandaracha was a substance found in gold and silver mines, varying between red and yellow. There was also a paler sort of sandaracha, which, with orpiment, or sulphuret of arsenic, and the several ochres, made up their different yellows. The Attic and Gallic ochres were pale, but many of those found in the hills near Rome were darker, and their tints were still farther deepened by burning. Several of the ochres when burnt assume a reddish hue. The blacks used by the ancients appear to have been the soot collected from burning such substances as resin or pitch. Black was also obtained from a peculiar earth, and from the blood of the cuttle fish. Atramentum was the name given to the best kinds of black—Kalcanthon, to the vitriolic black, only used for staining wood. Two kinds of blue were formed with a sand procured in Egypt, Scythia, and Cyprus, which was dyed with the juice of herbs. These blues were called respectively cæruleum and lomentum.

In concluding our notice of this subject we employ the language of Sir Humphrey Davy:—"It appears that the Greek and Roman painters had almost all the same colours as those employed by the great Italian masters, at the period of the revival of the arts in Italy. They had indeed the advantage over them in two colours, the Vestorian or Egyptian azure, and the Tyrian or marine purple.

"The azure, the red and yellow ochres, and the blacks, are the colours which seem not to have changed at all in the ancient fresco paintings. The vermilion is darker than recently made Dutch cinnabar, and the red lead is inferior in tint to that sold in the shops. The greens in general are dull. Massicot and orpiment were probably among the least durable of the ancient colours.

"If red and yellow ochres, blacks and whites, were the colours most employed by Protogenes and Apelles, so are they likewise the colours most employed by Raphael and Titian in their best style. The St. John and Venus in the gallery at Florence, offer striking examples of pictures in which all the deeper tints are evidently produced by red and yellow ochres, and carbonaceous substances."

LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
Published in Weekly Numbers, price One Penny, and in Monthly Parts, price Sixpence.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 605. DECEMBER 4TH, 1841. Price One Penny.

THE MARKET-CART, BY GAINSBOROUGH.

GAINSBOROUGH AND HIS WORKS. II.

LIKE the Dutch artists, Gainsborough was devoted to the representation of the rural features of his own country. His figures, mostly those of country people, are in general conspicuous objects in his pictures. In the National Gallery are his two well-known pictures, the "Watering-Place" and the "Market Cart." The former represents in the foreground a piece of still water, at which some cows are drinking, and children playing among rocks, with tall trees overshadowing. The feeling of rural tranquillity is well preserved in this picture: the subject, though simple, is well calculated to exhibit the skill and character of the artist; and the effect results mainly from the contrast of bright lights and deep shadows. The tone of colouring is, however, by some thought to be heavy, and the details not well made out.

An idea of the second picture, the "Market Cart," may be conveyed by the frontispiece to our present article. We see a road overgrown with bushy trees; two country girls are seated upon a cart, loaded with turnips and other vegetables; two lads are walking, and other figures enliven the back-ground. The tone of this picture is highly rich and harmonious. According to Dr. Waagen,—

It pleases the eye by a warmth of colouring which is peculiar to Gainsborough, yet the tone of the figures is very false, the handling affected and slight, the colouring much broken. What a difference between such a picture and an old Dutch one,—for instance, an Isaac Ostade treating a similar subject! How pithy and solid is his execution! how rounded and accurately characterized every individual object, yet without neglecting the harmony of the whole.

We are, however, inclined to think that there is more justice in the general remarks of Sir Joshua Reynolds, who says:—

A novelty and peculiarity of manner, as it is often a cause of our approbation, so likewise it is often a ground of censure; as being contrary to the practice of other painters, in whose manner we have been initiated, and in whose favour we have perhaps been prepossessed from our infancy, for, fond as we are of novelty, we are upon the whole creatures of habit. However, it is certain that all those odd scratches and marks, which on a close examination, are so observable in Gainsborough's pictures, and which even to experienced painters appear rather the effect of accident than design · this chaos, this uncouth and shapeless appearance, by a kind of magic, at a certain distance assumes form, and all the parts seem to drop into their proper places, so that we can hardly refuse acknowledging the full effect of diligence, under the appearance of chance and hasty negligence. That Gainsborough himself considered this peculiarity in his manner, and the power it possesses of exciting surprise, as a beauty in his works, I think may be inferred from the eager desire which we know he always expressed, that his pictures at the Exhibition should be seen near as well as at a distance.

Before resuming our memoir of his life we will distinctly notice one other painting of Gainsborough, and that a remarkable one: it is entitled "the Blue Boy." This is the portrait of a youth in a blue dress, and it is now in the gallery of the Marquis of Westminster. It has a natural elevation of look, and great ease of attitude, but the cerulean splendour of the boy's coat is at first somewhat startling. This picture owed its origin to a dispute between Gainsborough and other artists. Gainsborough's object was practically to disprove the opinion of Sir Joshua Reynolds,—that the predominance of blue in a picture was incompatible with good colouring; and in spite of the blue dress, our artist succeeded in producing a harmonious and pleasing effect. "And in truth there are," says Waagen, "in the cool shades of colours in which blue acts the chief part, very tender and pleasing harmonies, which, however, Sir Joshua, with his way of seeing, could not much approve. The Blue Boy is besides greatly distinguished for spirit and careful solid painting."

Reynolds used to say that Gainsborough could copy Van Dyck so exquisitely that at a certain distance the copy could not be distinguished from the original, or any difference be observed between them. He thought Gainsborough's manner to be peculiarly his own, and one which produced great force and effect: one day while examining a picture of his with considerable attention, he said, "I cannot make out how he produces his effect."

As Gainsborough's circumstances improved, he felt himself enabled to indulge his peculiar tastes. He was not greatly attached to reading, but considered himself to be well read in the volume of nature, and that that was learning sufficient for him. He did not therefore much covet the intercourse of literary men, but yet he was fond of company, and passionately so of music. He esteemed a good musician as one of the first of men, and a good instrument as one of the noblest works of human skill. He in consequence devoted much of his leisure to fiddles and rebecs: he collected numerous instruments, and received at his table musical professors of all descriptions, except bagpipers. He admired Giardini and his violin,—Abel and his viol-de-gamba,—Fischer and his hautboy, and was delighted with a strolling harper who came from the Welsh mountains to Bath. Music was with him at all times a favourite topic of conversation, and during his leisure he practised by fits and starts on his numerous instruments, and his performance is said to have been worthy of praise.

One of Gainsborough's acquaintances in Bath was Wiltshere, the public carrier, a kind and worthy man, who loved the artist and admired his works. In one of his landscapes the painter wished to introduce a horse, and as the carrier had a very handsome one, he requested the loan of it for a day or two, and named his purpose: the carrier saddled and bridled it, and sent it as a present. Upon this the artist painted the wagon and horses of the friendly carrier, put his whole family and himself into it, and sent it well framed to Wiltshere, with his best respects. This picture is considered to be a capital performance. While our artist resided in Bath, but exhibited his pictures in London, Wiltshere was annually employed in the removal of his paintings, and constantly refused to accept money for his services, but being a great lover of the art, he would ask and obtain a small picture of the painter, according to the amount of carriage performed. Several of these pictures still remain in the family of the carrier, and their value is justly appreciated.

When settled in London, Gainsborough engaged in portraiture and landscape painting with fresh feeling and increasing success. He had a fine house and gallery in Pall Mall, and, though Sir Joshua was then high in favour, yet there was room for another, who, to just delineation of character, added a force and a freedom which approached, and sometimes rivalled, Van Dyck. The splendour of his colours was permanent, and to all his performances he imparted an air of truth.

A conversation or family piece of the king, the queen, and the three royal sisters, was much admired, as also were some sketches of the Duchess of Devonshire; but Gainsborough declined to send to Chatsworth a painting of her Grace, because he felt that "her dazzling beauty, and the sense which he entertained of the charms of her looks and her conversation, took away that readiness of hand and hasty happiness of touch which belonged to him in his ordinary moments."

Gainsborough never attached his name to any of his productions, and very seldom the date. One of his own chief favourite compositions was the "Cottage Girl with her Dog and Pitcher," which is, as Cunningham remarks, a happy and well-considered scene.

Such a picture is well calculated to illustrate the following spirited observations of the above-named writer:—

The chief works of Gainsborough are not what is usually called landscape, for he had no wish to create gardens of paradise, and leave them to the sole enjoyment of the sun and breeze. The wildest nooks of his woods have their living tenants, and in all his glades and his valleys we see the sons and daughters of men. A deep human sympathy unites us with his pencil, and this is not lessened because all its works are stamped with the image of Old England. His paintings have a national look. He belongs to no school; he is not reflected from the glass of man, but from that of nature. He has not steeped his landscapes in the atmosphere of Italy, like Wilson, nor borrowed the postures of his portraits from the old masters, like Reynolds. No academy schooled down into uniformity and imitation the truly English and intrepid spirit of Gainsborough.

Gainsborough lived to the age of sixty-one. Being present at the trial of Warren Hastings, he was sitting with his back to an open window, when he suddenly felt something very cold touch his neck; stiffness, and pain succeeded. On returning home, a mark was seen about the size of a shilling, which was harder to the touch than the surrounding skin, and which he said still felt cold. The use of flannel did not avail to remove it. The most eminent surgeons, however, and John Hunter among them, declared there was no danger. It turned out however, according to the presentiment of the artist himself, to be a cancer, which proved fatal. On his death-bed he sent for Reynolds to thank him for the kind and liberal manner in which he had always spoken of him in public and in private. This was the more pleasing because it was generally known that professional jealousies had existed between these artists. In a Discourse pronounced soon after the death of his rival, Reynolds thus refers to the occasion:—

I cannot prevail on myself to suppress, that I was not connected with him by any habits of familiarity: if any little jealousies had subsisted between us, they were forgotten in those moments of sincerity; and he turned towards me as one who was engrossed by the same pursuits, and who deserved his good opinion, by being sensible of his excellence. Without entering into a detail of what passed at this last interview, the impression of it upon my mind was, that his regret at losing life, was principally the regret of leaving his art; and more especially as he now began, he said, to see what his deficiencies were: which he said, he flattered himself in his last works were in some measure supplied.

These remarks on the dying artist's state of mind may teach us that whatever we allow to become the first object in life will assuredly cling to us even on the threshold of eternity; and it is therefore necessary to make the inquiry, even with respect to our most innocent and laudable pursuits, whether they are not usurping a place in our thoughts and affections, which as immortal and responsible creatures we cannot safely assign to them.

Gainsborough was buried on the 9th of August, 1788, in Kew Church-yard; according to his expressed wish his name alone was cut on the tomb-stone. Sir Joshua Reynolds, Sir William Chambers, West, Meyers, Bartolozzi, Paul Sandby, Cotes, Sheridan and others attended his funeral.

We have already expressed regret that the biography of this great artist is so meagre. There are, however, many details respecting him preserved in the fourteenth Discourse of Sir Joshua Reynolds, which must be peculiarly valuable to the student, not only as affording him the character of this master from one so well qualified to pronounce it, but also as revealing some of the methods of working whereby Gainsborough produced such charming effects. For the general reader a few extracts from this Discourse will suffice: the student will do well to study the Discourse itself.

In the early part of this performance occurs the following remarkable passage, which is alike honourable to him who uttered it and to him who is the subject of it, and which our subsequent experience in art has fully confirmed.

If ever this nation should produce genius sufficient to acquire to us the honourable distinction of an English school, the name of Gainsborough will be transmitted to posterity, in the history of the art, among the very first of that rising name.

Comparing Gainsborough with certain masters of the Roman school, he says:—

For my own part I confess I take more interest in, and am more captivated with the powerful impression of nature, which Gainsborough exhibited in his portraits and in his landscapes, and the interesting simplicity and elegance of his little ordinary beggar children, than with any of the works of that school, since the time of Andrea Sacchi, or perhaps we may say Carlo Maratti,—two painters who may truly be said to be ULTIMI ROMANORUM.

And then, anticipating the surprise with which this bold opinion was likely at that time to be received, he adds:—

I am well aware how much I lay myself open to the censure and ridicule of the academical professors of other nations in preferring the humble attempts of Gainsborough to the works of those regular graduates in the great historical style. But we have the sanction of all mankind in preferring genius in a lower rank of art, to feebleness and insipidity in the highest.

Among the causes which led Gainsborough to the attainment of such high excellence, Sir Joshua states the fundamental one to be

The love which he had to his art, to which indeed his whole mind appears to have been devoted, and to which everything was referred; and this we may fairly conclude from various circumstances of his life, which were known to his intimate friends. Among others he had a habit of continually remarking to those who happened to be about him, whatever peculiarity of countenance, whatever accidental combination of figure, or happy effects of light and shadow occurred in prospects, in the sky, in walking the streets, or in company. If, in his walks, he found a character that he liked, and whose attendance was to be obtained, he ordered him to his house: from the fields he brought into his painting-room stumps of trees, weeds, and animals of various kinds, and designed them, not from memory, but immediately from the objects. He even framed a kind of model of landscapes on his table, composed of broken stones, dried herbs, and pieces of looking-glass, which he magnified and improved into rocks, trees, and water. How far this latter practice may be useful in giving hints the professors of landscape can best determine. Like every other technical practice, it seems to me wholly to depend on the general talent of him who uses it.

Another illustration of his great affection for his art was his custom of painting by night, since he could not amuse himself in the evening by any other means (not even by music) so agreeable to himself.

I am indeed (says Sir Joshua) much inclined to believe that it is a practice very advantageous and improving to an artist, for by this means he will acquire a new and a higher perception of what is great and beautiful in nature. By candle-light not only objects appear more beautiful, but from their being in a greater breadth of light and shadow, as well as having a greater breadth and uniformity of colour, nature appears in a higher style, and even the flesh seems to take a higher and richer tone of colour.

THERE is something sublime in the impression produced upon a contemplative mind, passing from hall to hall, and gallery to gallery, of a museum filled with the noblest objects of human genius, wrested from the oblivion of long departed years. As you enter each apartment, a new era in the history of the world seems to dawn upon you—and you find yourself surrounded with the most illustrious beings, by whose genius and whose actions it was distinguished and adorned. Centuries there dwindle into hours and minutes—you pass from age to age as you move from room to room—and in the lounge of a morning, you seem to have communed with the greatest characters that have appeared upon the busy theatre of the ancient world. Instead of days, months and years might be devoted to the examination of such interesting objects, and, after all, the eye of the connoisseur, and the mind of the Christian philosopher, would discover new beauties, and suggest fresh trains of thought.

OPTICAL ILLUSIONS IX.

ON BINOCULAR VISION, (*concluded.*)

IN describing the very interesting experiments of Mr. Wheatstone on the subject of binocular vision, we have given some of the figures by which he illustrates the truth of the principles which he was the first to unfold. We may now give a few others, from which it will be evident that an almost interminable number might be produced. They are arranged in pairs, each pair consisting of two *monocular* pictures, as Mr. Wheatstone very conveniently terms them; that is, pictures as seen by one eye only; one picture of each pair representing the appearance which a certain solid body would present to the right eye; the other, the appearance presented to the left. These pairs, when placed in the stereoscope, produce a combined image, in which the idea of relief is strongly impressed on the mind. In fig. 6 (*a*) the

Fig. 6. (*a*)

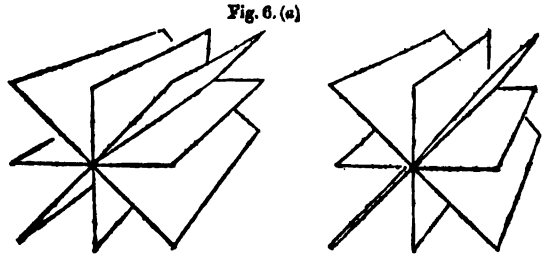


Fig. 6 (*b*).

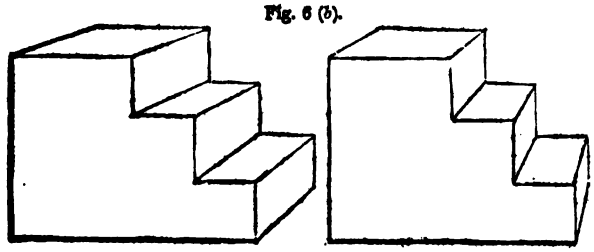
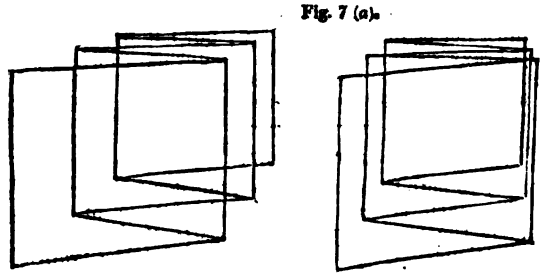


Fig. 7 (*a*).



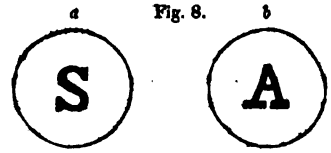
eight leaves or fans appear really to stand out in relief; so do the steps in fig. 6 (*b*); the five leaves or plates in fig. 7 (*a*); and the small tower in fig. 7 (*b*).

The results of the experiments made by aid of the stereoscope prove that if two pictures of similar size, and differing from each other only in the same degree as objects differ in their appearance to the two eyes, be viewed in the way described in our last paper, they will produce an image apparently in relief. But in order to embrace other varieties of the question, it may be asked, "What would result if the pictures were of different magnitudes?" and "What would result if they were of different forms?" Mr. Wheatstone gives the results of his investigations of these two points.

First as regards the difference of magnitude. If two squares or circles, differing a little in size, be drawn on two separate pieces of paper, and placed in the stereoscope, so that the reflected image of each shall be equally distant from the eye by which it is regarded, it will be seen that they coalesce, and produce a single image, notwithstanding the difference of size in the pictures. This experiment shows that the difference of size does not render the result discordant with those before given, but it leaves untouched the question as to what relation exists between the size of the resultant image and that of each of the pictures. This comparison may be made by placing the two drawings side by side on a plane before the eyes, and making the optic axes converge to a point either nearer or farther than the plane in which the pictures are placed: the two pictures and their binocular image being thus all brought into a line, it is found that the latter is midway in size between the other two. It is justly remarked by Mr. Wheatstone, that were it not for this binocular coalescence of two unequal images, we could never see objects clearly except when looking immediately forward; for when we look obliquely towards either *side*, say the right, the left eye is at that moment farther from the object than the right eye is, and consequently recognises it as being smaller in size; yet the resultant image is clearly defined, in consequence of the law just detailed.

With regard to the effect of placing two *pictures of* different *forms* before the two eyes, Mr. Wheatstone arrived at a very curious result, and one which seems to open an extensive field for inquiry. If two small pictures, such as *a* and *b*, fig. 8, be placed, one in each half

Fig. 8.



of the stereoscope, it might be supposed that the resultant image would be a kind of confused superposition of the one on the other; but this is not the case. The common circular border remains constant as a circle, but the letter within it changes alternately from that which would be perceived by the right eye alone to that which would be perceived by the left eye alone. At the moment of change the letter which has just been seen breaks up into fragments, while fragments of the letter which is about to appear mingle with them, and are immediately after replaced by the entire letter. It does not appear to be in the power of the will to determine the appearance of either of the letters; but the duration of the appearance seems to depend on causes which are under our control. Thus, if the two pictures be equally illuminated the alternations appear in general of equal duration, but if one picture be more illuminated than the other, that which is less so will be perceived during a shorter time.

The circumstance for which this last mentioned experiment may be deemed important, is that it corroborates certain experiments made by other philosophers on the subject of colour. It is known that if blue and yellow fragments or powders be mixed, a green colour will result; that orange results from a mixture of red and yellow, &c.; and it has been supposed by some that if one eye gazed upon a red colour while the other gazed upon yellow, or one upon blue and the other upon yellow, that the mind would appreciate in the one case an orange tint, and in the other a green, the component colours being individually lost in the blending of the two. M. de la Tour made an experiment on this point, by placing a blue disc before the right eye, and a yellow one before the left; but instead of the green tint which would appear if these two colours had mingled before their arrival at a single eye, he perceived the two colours distinctly and separately, one or the other alternately predominating either partially or wholly over the disc. Mr. Wheatstone states the result in an exactly similar manner; and it would be a very interesting question to determine, whether *other* eyes see the phenomena in the same manner. It is known that great differences exist in the power of vision, in the appreciation of colour, in the symmetrical position of the optical axes of the two eyes, &c., and it often happens that many of the results obtained by experiments are a good deal influenced by these circumstances. Could this point be definitely settled, it

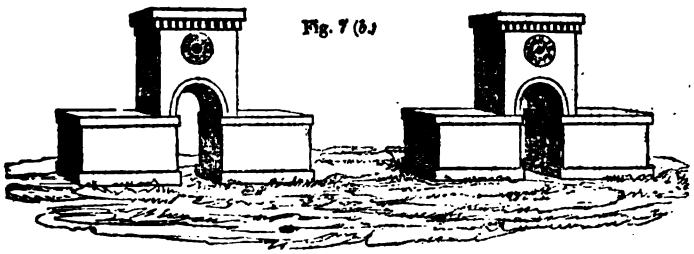


Fig. 7 (b)

might lead to important results, for the theory seems to show that the mind does not and cannot appreciate two images at once, as presented in the two eyes, but alternates rapidly from the appreciation of the one to that of the other.

As the experiments with the stereoscope show that there is an essential difference in the appearance of objects when seen with two eyes, or when only one eye is employed, and that the most vivid belief in the solidity of an object of three dimensions arises from two different perspective projections of it being simultaneously presented to the mind, it may be asked, how do persons, who see with *one* eye, avoid mistaking a picture for a solid object, and how do those who are accustomed to see with two eyes, avoid mistake when they close one eye? Mr. Wheatstone answers these questions thus.—Although the simultaneous vision of two dissimilar pictures suggests the relief of objects in the most vivid manner, yet there are other signs which suggest the same ideas to the mind, which, though more ambiguous than the former, become less liable to lead the judgment astray in proportion to the extent of our previous experience. The vividness of relief, arising from the projection of two dissimilar pictures, one on each retina, becomes less and less, as the object is seen at a greater distance before the eyes, and entirely ceases when it is so distant that the optic axes are parallel while regarding it. We see with both eyes all objects beyond this distance precisely as we see near objects with a single eye; for the pictures on the two retinæ are then exactly similar, and the mind appreciates no difference whether two identical pictures fall on corresponding parts of the two retinæ, or whether one eye is impressed with only one of these pictures. A person deprived of the sight of one eye sees therefore all external objects near and remote, as a person with both eyes sees remote objects only; but the vivid effect arising from binocular vision of near objects is not perceived by the former: to supply this deficiency he has recourse unconsciously to other means of acquiring more accurate information; of which the principal is the motion of the head. The manner in which the movement of the head furnishes this collateral evidence is thus explained:—The mind associates with the idea of a solid object every different projection of it which experience has hitherto afforded; a single projection may be ambiguous, from its being also one of the projections of a picture, or of a different solid object; but when different projections of the same object are successively presented, they cannot all belong to another object, and the form to which they belong is completely characterized. While the object remains fixed, at every movement of the head it is viewed from a different point of sight, and the picture on the retina consequently continually changes.

The reader will remember, that in one of our former papers on optical illusions, we described the appearance which a hollow cavity, such as the interior of a shallow vessel, or an intaglio, or seal, presents when viewed under particular circumstances; it appears to the eye to be convex instead of concave; a seal or intaglio appearing to have been converted into a cameo. We explained that this apparent change or illusion is brought about principally by the mode in which light and shadow are distributed over the object; but Mr. Wheatstone attributes the effect partly to circumstances which have already been explained in these papers.

There are other branches of this interesting and extensive subject, into which Mr. Wheatstone partly enters; but as he gives us ground for hope that he will at some future period publish the results of further experiments thereon, we will not here present those features which are as yet imperfect. We will, therefore take leave, till some future time, of these important contributions to the physiology of vision.

We cannot refrain from expressing a hope that the reader will repeat all these interesting and instructive experiments. The stereoscope is an instrument which may be easily and cheaply constructed. For all ordinary purposes the screw might be dispensed with and a lateral movement given to the flaps E E', fig. 4 (*a*), by means of hinges. The various figures must be drawn accurately and neatly on drawing-paper or card; the right-hand figure on one piece, and the left-hand figure on another. Should the young student find any difficulty in procuring the two little mirrors, let him purchase two pieces of plate glass of the required size, and silver them himself according to the following simple directions, which we borrow from Mr. Tomlinson's *Student's Manual of Natural Philosophy*.

To construct a *plane* mirror,—procure a piece of plate-glass, and polish it until perfectly clean. Then cut out a piece of tin foil of the exact size of the glass: let the foil be quite smooth and free from wrinkles and holes. Place it on any smooth and level surface, and cover it with a layer of clean mercury: then having gently smoothed the surface of the mercury, by means of a piece of cotton wool, or a hare's foot, the under surface of the mercury will combine with the foil; the upper surface being brilliant and reflective. Then place a piece of stout paper of greater extent than the intended mirror upon this amalgam; and lay the glass upon the paper exactly over the amalgam. Press firmly upon the glass; and draw out the paper in a steady equable manner: this will exclude the air from between the amalgam and the under surface of the glass. The glass will thus be evenly coated with the amalgam, and a plane mirror will be formed; which must not be taken up directly; but left under pressure of a heavy weight for a few hours, during which time the surface on which the mirror rests should be gradually sloped in order that all superfluous mercury may drain off.

Manchoo Tartary

Is tributary to both China and Japan, but dependent on the latter The men are athletic, tall, and jealous of their women, and the country not unlike parts of the western coast of Scotland. They live chiefly on vegetables, varied at times by puppy's flesh; in many of the houses we found these little creatures fattening for their fate; for, although they have plenty of bullocks, they employ them only for agricultural purposes; and all through China and along this coast, milk, a principal article of diet among European peasantry, is not used. We remarked that the Chinese at Chusan laughed immoderately at our soldiers milking the goats, as they think it unnatural that man should drink the milk of animals. However, the Tartars to the westward are said by travellers to live almost entirely on the milk obtained from the camel; so this must be a prejudice which the people of Manchoo have derived from the Chinese.

We found the most useful articles of barter here were the brass buttons on a naval jacket, the worth of one being estimated far higher than a Spanish dollar, of which they did not seem at first to comprehend the value; for a button, kindly furnished me from the jacket of a friend, I became the owner of a sheep and some poultry, and, I suspect, both purchaser and seller were equally proud of their ability at barter.

Their houses are much the same as in China, but the mode of cultivating the land must be here laborious. All the hills are terraced to the summit, on account of the severe rains to which they are subject, and which often sweep the whole side of a hill into the valley below. Traces of these devastations meet the sight on every side, showing how necessary is the precaution.—*Six Months with the Chinese Expedition.*

ON SHOOTING STARS.

FOR some years past a periodical phenomenon has occurred on the 9th and 10th of August, and still more strikingly on the 12th and 13th of November, to which the attention of astronomers and meteorologists has been drawn in a marked degree, viz., the appearance of a very large number of meteors or shooting-stars.

What these shooting stars are we are little able to surmise. Aërolites, fire-balls, shooting-stars, and other phenomena of somewhat analogous kinds, have attracted attention from early ages, and numerous theories have been advanced to account for their formation. Soon after Franklin made known his researches in electricity, an opinion was formed that shooting-stars were due to some electrical action going on in the atmosphere. Afterwards Chladni, a celebrated German philosopher, conceived that the origin, both of those bodies which actually fell to the earth, and of those which merely appeared luminous in the heavens, might be accounted for in some such way as the following: that these meteors are masses of matter, moving through space with velocities equal to those of the planets; that when they encounter the earth's atmosphere they become inflamed by the resistance and friction, and thence rendered luminous; and that some of them burst into pieces, and scatter masses of stone and iron on the ground. This theory was ridiculed by some and supported by others, but attention was not so strongly drawn to the subject until it was observed that the luminous meteors appeared in greater abundance about the dates above mentioned than at any other periods of the year.

Sir William Hamilton, after describing an eruption of Vesuvius, which took place on the 9th of August, 1779, spoke of a phenomenon which occurred in the following night.

It was universally remarked (said he) that the air this night, for many hours after the irruption, was filled with meteors, such as are vulgarly called falling-stars. They shot generally in a horizontal direction, leaving a luminous train behind them, but which quickly disappeared. The night was remarkably fine, starlight, and without a cloud. This kind of electrical fire seemed to be harmless, and never to reach the ground, whereas that with which the black volcanic cloud of last night was pregnant appeared mischievous, like that which attends a severe thunderstorm.

Professor Quetelet, of Brussels, has collected numerous proofs of similar phenomena having occurred within the last few years, on the 9th and 10th of August. Similar exhibitions have taken place during the first week in August, but the 9th and 10th seem to be the most conspicuous days. At a meeting of the Astronomical Society about two years ago, Professor Schumacher gave an account of some August meteors which he had observed in conjunction with several other astronomers, and other scientific bodies have received numerous communications of a similar kind.

But the November meteors are still more numerous than those of August. The first recorded observations of which we are aware is that of the 11th of November, 1799, when Humboldt and Bonpland observed many thousands of shooting-stars within a few hours, at Cumana, in South America, and in the same night similar meteors were observed by different persons throughout almost the entire extent of America, as well as in some parts of Europe. On the 12th of November, 1832, philosophers in every part of Europe saw numerous displays of these bodies, but the following year, 1833, presented a phenomenon which surpassed everything previously seen. From the accounts which Professor Olmsted gave of what he saw on the 12th of November in that year, at a place in North America, M. Arago computed the number of meteors on that night at not much less than a quarter of a million! In the years 1834, 1835, 1836, and 1838, similar exhibitions, more or less extensive, have been noticed in many parts of the world; but it has been stated that 1839 and 1840 were not so prolific in them.

Before giving an outline of the theories which have been offered in explanation of these phenomena, it may be well to state what is known respecting their height and velocity.

No experiments seem to have been made for the determination of the height and velocity of shooting-stars until the year 1798, when Brandes and Benzenberg, two German astronomers, undertook a series of observations for this purpose. Having selected a line, about nine miles in length, they stationed themselves at its extremities, and began to observe on nights previously agreed on. When a meteor was seen they immediately traced its apparent path on a celestial map, noticing carefully the exact times of its appearance and extinction, with any other circumstances likely to assist in identifying it. Several of the meteors were sufficiently identified to make it certain that they were seen by both parties, and the recorded results, when worked out by the aid of trigonometry, gave tolerable indications of the heights and velocities of the meteors. Of twenty-two computations thus obtained, it was found that one gave the height of the meteor about 6 English miles above the surface of the earth; six others were between 6 and 45 miles high; nine were between 45 and 90 miles; and six were above 90 miles, one being as much as 140. With respect to velocities there were only two observations which could be depended on, one of which gave a velocity of about 21 miles, and the other 25 miles per second,—a velocity exceeding that of the earth. It was noticed as a remarkable circumstance, and one deserving of attention in reference to any theories on the subject, that one of the meteors moved *upwards*, or away from the earth.

About the year 1823 another attempt, on a more extensive scale, was made to measure the heights and velocities of meteors. The German observer, Brandes, assisted by several other persons, made a series of observations, from April to October, 1823, in Breslau and the neighbouring towns. During this interval more than eighteen hundred shooting-stars were observed by some or other of the parties, but only about a hundred of these were observed simultaneously at different places, so as to afford the means of computing the heights and velocities. Of these meteors, the altitudes of four were computed to be under 15 miles; fifteen were between 15 and 30 miles; twenty-two were between 30 and 45 miles; thirty-five were between 45 and 70 miles; thirteen were between 70 and 90 miles; and eleven were above 90 miles. The four highest had altitudes of 140, 220, 280, and 460 miles, respectively. Of those meteors whose directions of motion was sufficiently determined it was found that twenty-six had a motion downwards, nine upwards, and one horizontal. With respect to the velocities with which they move, only three computations were made which could be depended on, and these gave velocities of 23, 28, and 37, miles in a second, respectively,—all being greater than the velocity of the earth in its orbit.

In 1824 M. Quetelet made a similar series of observations in Belgium; the results of which gave, as the velocity of the various meteors which he measured, from 10 to 25 miles, the mean being a little less than the velocity of the earth in her orbit. In August, 1838, M. Wartmann, and several assistants, made an extensive series of observations of a similar kind in Switzerland. Some of the observers stationed themselves at Geneva, while the others were stationed at Planchettes, a villa at about sixty miles distant. On the 10th of August, in the space of about seven hours and a half, nearly four hundred meteors were observed at Geneva; while those at Planchettes observed rather more than a hundred; and from a comparison of the two sets of observations, it was found that the average of height of those which had

been observed at both stations was more than 500 miles; while the velocities attained the startling amount of 240 miles in a second.

Such are the results of the observations which have been made on the heights and velocities of these meteors; and we next speak of the theories which have been framed to account for them. Mr. Galloway, in a paper read before the Astronomical Society a few months ago, divides these theories into five classes, and states some of the objections which may be urged against each.

1. Benzenberg, and some other observers, suppose that shooting stars and fire-balls are substances projected from volcanoes in the moon. If a body were projected vertically from the surface of the moon with a velocity five times greater than that of a cannon-ball, it is capable of calculation, on the theory of gravitation, that the projectile would reach a point in space where the earth's attraction is stronger than the moon's, and would consequently then fall to the earth. Benzenberg, in accordance with this theory, supposes that shooting stars are small masses of stone, from one to five feet in diameter; which are projected from lunar volcanoes, and instead of falling on the surface of the earth, are whirled round it in a kind of orbit. The objections to this theory are the extraordinary numbers which appear at intervals, and the *periodicity* of the August and November meteors.

2. The second theory, proposed by Dr. Olbers, is, that the shooting-stars are the *débris* or fragments of a large planet, burst into pieces by some internal explosion, and of which the asteroïds, Pallas, Ceres, Juno, and Vesta are the principal remaining portions. These small fragments he supposes to circulate about the sun in very elongated orbits; and that when they approach the region of space through which the earth is moving, they enter the earth's atmosphere, and by reason of the resistance and friction are rendered luminous, whereby they present to us somewhat the appearance of stars.

3. M. Biot supposes that these meteors have a close connection with the zodiacal light. This is a lens-shaped portion of the heavens which presents a slightly luminous or nebulous appearance, similar to that called the "milky way." It is objected to this theory, that as the earth passes obliquely through the plane of this zodiacal light, it must vary in its distance therefrom, and that therefore the shooting-stars ought to present very different appearances at different times; whereas, they are nearly alike all the year through, although more plentiful at some periods than others.

4. Arago and many other astronomers suppose that independently of the great planets, there exist in the planetary regions myriads of small bodies which circulate about the sun, generally in groups or zones; and that one of these zones intercepts the ecliptic about the place through which the earth passes in November. It would appear from a letter which Sir John Herschell sent to the Athenæum Journal a few weeks ago, that he coincides in this opinion so far as relates to the August meteors. He says:—"The meteors of August 9, 1840, in so far as I observed them, radiated almost without exception from a point in the heavens very near the star γ (gamma) in the constellation Perseus: which is almost coincident with the point (near the star B Camelopardali) from which I observed them to emanate on the 10th of August, 1839." Facts of this nature appear almost decisive in favour of the opinion, that a zone or zones of these bodies revolve about the sun, and are intersected by the earth in its annual revolution.

Mr. Galloway adduces five classes of objections to this hypothesis. First.—That bodies moving in groups in this way, would necessarily move in the same direction, and consequently, when they become visible from the earth, they would all appear to emanate from one point, and move towards the opposite; whereas shooting-stars are observed on the same nights to emanate from all points of the heavens, and to move in all possible directions. Secondly.—The average velocity at which these shooting-stars seem to move greatly exceeds that which any body circulating about the sun can have at the distance of the earth. Thirdly.—From the luminous train which they generally leave behind them; from their being situated within the earth's shadow, and at heights far exceeding those at which the atmosphere can be supposed capable of supporting combustion, it follows that their light, instead of being reflected from the sun, is self-supported, contrary to every analogy of the solar system. Fourthly.—If the shooting-stars be solid matter, passing within a few hundred miles of the earth, many of them would inevitably be attracted to it; which has never yet been known to occur. Lastly.—Some of the shooting-stars are seen to move in a path inclining upwards; a fact which is difficult to reconcile with the theory.

5. The last theory to which we shall allude is, that advanced by Capocci of Naples. He supposes the Aurora Borealis, shooting-stars, aërolites, and comets, to have a common origin, and to be due to the aggregation of atoms of matter, brought into unison by magnetic action. He supposes, that in the planetary spaces there exist bands or zones of nebulous particles, more or less fine, and endued with magnetic forces, which the earth traverses in its annual revolution; that the smallest and most impalpable of these particles are occasionally precipitated on the magnetic poles of our globe, and form polar auroras; that the particles a degree larger, in which the force of gravitation begins to be manifested, are attracted by the earth, and appear as shooting-stars: that the particles in a more advanced state of concretion give rise in like manner to the phenomena of fire-balls, aërolites, &c.; that the comets, which are known to have very small masses, are nothing else than the largest of the aërolites, which in course of time collect a sufficient quantity of matter to be visible from the earth.

It will be seen from these details that the present state of our knowledge is inadequate to explain the subject of shooting stars. Our ignorance of a subject is often well displayed by the many conflicting theories which accompany it; but we are generally so anxious to explain, that time is not allowed to collect materials necessary to an explanation. Probably many years of accurate observation will be necessary to form a consistent theory on a subject which has only just begun to be included among the *periodical* phenomena of nature.

GARDEN-HERBS. XI.

Hyssop.

Dioscorides, that gave so many rules for the knowledge of simples, hath left Hyssop (*Hyssopus Arabum*,) altogether without description, as being a plant so well known that it needed none: whose example I follow. A second kind of hyssop (*H. arabum flore rubro*,) is like the common hyssop, and differeth in that, that this hyssop hath his small and slender branches decked with fair red flowers. A third kind (*H. albis floribus*,) differeth only in having flowers as white as snow. The fourth kind (*H. tenuifolia*) is of all the rest of the greatest beauty; it hath a woody root, tough, and full of strings, from which rise up small, tough, and slender flexible stalks, whereupon do grow infinite numbers of small fennel-like leaves much resembling those of the smallest grass, of a pleasant smell and aromatic taste, like unto the rest of the hyssops, but much sweeter; at the top of the stalks do grow among the leaves small hollow flowers of a bluish colour tending to purple. We have in England in our gardens another kind like unto the former, but the leaves are some of them white, some green, as the other, and some green and white, mixed and spotted, very goodly to behold. Of which kind we have moreover in our gardens another sort, whose leaves are wonderfully curled, rough and hairy, growing thick thrust together, making as it were a tuft of leaves; in taste and smell, and in all other things like unto the common hyssop.—Gerard.

Hyssop has nearly the same name in most European languages, and is derived from the Hebrew word *ezub*,

which has been variously translated; but its most probable signification is a holy herb, or herb for purifying holy places. At the institution of the Passover, Moses commanded the Israelites to take a bunch of hyssop, and dip it in the blood of a lamb, and to sprinkle the lintel and the door-posts. (Exodus xii. 22.) It was also used by the priest at the cleansing of persons afflicted with leprosy, as well as for purifying the house of the leper. (Leviticus xiv. 4, 49, and 52.) These, and other passages of Scripture, do not refer to the plant which now bears the name of hyssop. A modern authority is of opinion that the hyssop of Scripture is the *Phytolacca decandra*, or that it belonged to the genus in which this plant occurs. The length and straightness of the stem are characteristic of the various kinds of phytolacca, and afford an obvious reason why the Roman soldier placed a sponge filled with vinegar upon hyssop in order to raise it to the lips of our Saviour. (John xix. 29.) The *Phytolacca decandra* and other species of the genus, contain a considerable quantity of potash, so that a hundred pounds of its ashes afford forty-two of the caustic alkali; hence, an illustration is afforded of the passage in Psalm LI.,—"Purge me with hyssop, and I shall be clean."

The accompanying cut and description we borrow from the *Bible Cyclopædia*:—

The phytolacca belongs to the family *Chenopodeæ*, in which the barilla plant is found, but it is unlike the rest of its congeners in the extreme beauty of its flowers, and the berries by which they are succeeded. These flowers are generally of a fresh and lively pink, disposed in elegant clusters. The berries are compounded of a circle of carpella, or minute fruits closely joined together. The leaves are generally smooth, and neatly shaped, and the stem is long, smooth, and wand-like. It usually rises to about a foot and a half in height, but in Palestine it sometimes exceeds two feet.

Burder says,—

Salmasius, cited by Wolfius, proves that there was a species of hyssop whose stalk was sometimes two feet long, which was sufficient to reach a person on a cross, that was by no means so lofty as some erroneously imagine.

Some authors have imagined that the hyssop of Scripture is the shrub which we call Winter Savory: but this opinion is contradicted by Pliny, who gives an account of savory and another distinct account of hyssop: he says that the best hyssop grew on Mount Taurus in Cilicia, and next to that the hyssop of Pamphylia was most esteemed. He describes it as a herb not friendly to the stomach. The Romans used it with figs as an aperient, and with honey as an emetic: and a plaster formed from it was thought to be a remedy for the sting of serpents. Five sprigs of hyssop, and two sprigs of rue, boiled with three figs are recommended by him as an excellent drink to relieve the chest.

Aiton notices three species of hyssop and four varieties of the common sort, the earliest of which was cultivated in England in 1548. The species of hedge hyssop noticed by this author are exotics; but as early as the year 1590, Gerard states that he found the broad-leafed hedge hyssop growing wild:—

It groweth in moist places. I found it growing upon the bog or marrish ground, at the further end of Hampstead Heath, and upon the same heath towards London, neere unto the head of the springs that were digged for water to be conveied to London, 1590, attempted by that careful citizen Sir John Hart, Knight, Lord Maior of the Citie of London: at which time myself was in his Lordship's company, and viewing for my pleasure the same goodly springs, I found the said plant not heretofore remembered.

Mr. Henry Phillips has collected a number of authorities to show the high estimation in which hyssop was held during the palmy days of the herbalists. Dodoens wrote much on the medical virtues of this herb; he recommends a decoction of this plant with figs, rue and honey, boiled together, as good for the complaints of the chest, shortness of breath, and hard dry coughs: when given with figs he says it is an excellent vermif... and is an admirable gargle for the mouth and thro... He states also that hyssop boiled in vinegar, ... held in the mouth, eases the tooth-ache; and that ... decoction removes congealed blood occasioned by bruis... and takes off the black or blue marks. Later author... have greatly commended it in cases of bruises; it ma... be applied either as a cataplasm, or a little bundle ... the plant put into linen rag and applied to the pa... Ray gives an account from Mr. Boyle of a violent co... tusion from a kick of a horse which was happily cured by this herb, boiled and applied as a cataplasm. He says, that the violent pain was almost instantly removed, and the very mark and blackness taken off in a few hours. It is probable, however, that in modern practice a simple fomentation of water would be thought as effectual as any medicated preparation of the herbalists.

Riolanus the elder speaks of the efficacy of *hyssop* in sugillations* of the eyes:—

I found by experience (says that physician,) the truth of what Archigenes affirms, in Galen, which is, that if the tops of hyssop be tied up in a cloth, and boiled in water, and the cloth afterwards applied warm to the livid eye, the blood will be attracted by the hyssop to such a degree as to stain the linen. Upon this authority I have, several times, prescribed a decoction of hyssop against sugillations, even of the eyes; only, instead of water, I sometimes ordered the bag to be boiled in wine; and directing the application of it somewhat warm to the eye-lids, when the patient went to bed, his eyes being shut, the lividness was removed as well as I could wish.

Phytolacca decandra.

* This word is expressive of the black and blue marks produced on the body by strokes. It is derived from the Latin *sugillare*.

LLOYD, in his *State Worthies*, gives the following account of Sir Edward Coke:—"His parts were admirable; he had a deep judgment, faithful memory, active fancy. And the jewel of his mind was put into a fair case,—a beautiful body with a comely countenance;—a case, which he did wipe and keep clean, delighting in good clothes, well worn, and being wont to say, that the outward neatness of our bodies might be a monitor of purity to our souls."

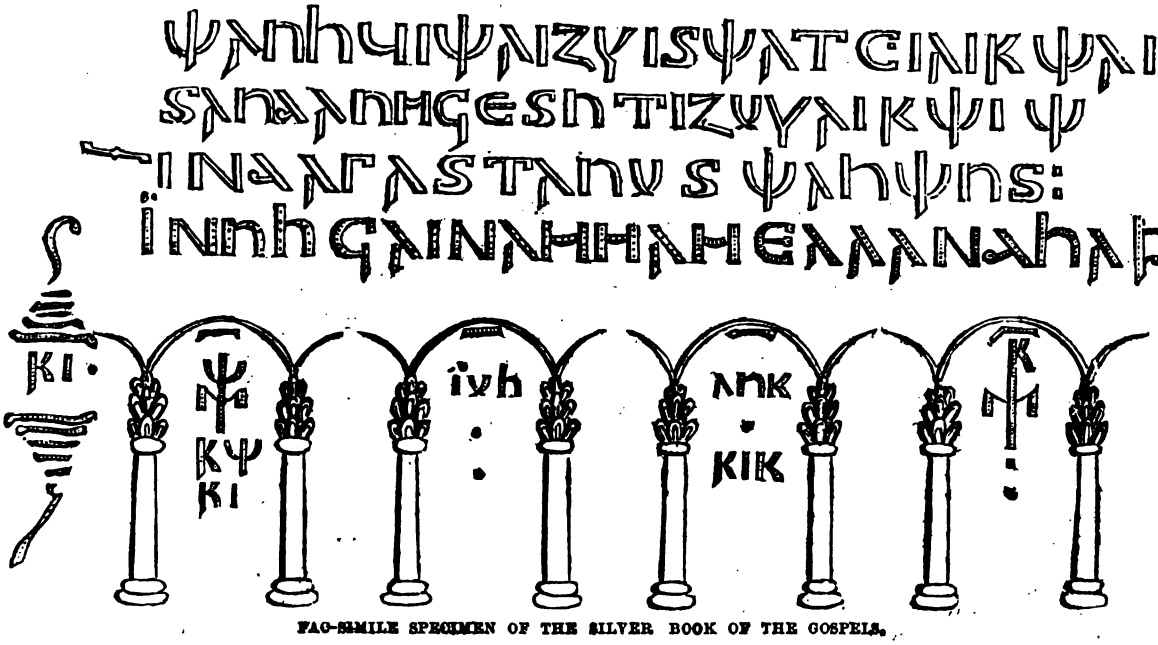
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 606. DECEMBER 11TH, 1841. { PRICE ONE PENNY.

THE SILVER BOOK OF THE GOSPELS.



FAC-SIMILE SPECIMEN OF THE SILVER BOOK OF THE GOSPELS.

THE art of printing was first brought into use by Europeans about four hundred years since, when our ancestors began to shake off their long sleep of a thousand years. Five centuries before that the Chinese began to use the same art at the opposite extremity of the Old World, when England was struggling for life against the Danes; but a sort of printing or impressing was practised in Europe perhaps fifteen, or at least thirteen centuries ago. So near indeed did this mode of impressing approach the present art of printing, that it is surprising no further progress was made. It would be a curious speculation to consider how far the complete discovery of printing might have repelled the thick cloud of ignorance which hovered so long over Europe: the effect may not perhaps have been great: the barbarous tribes who overwhelmed the civilized world might not have appreciated the art, though the subject of this article shows that, under one aspect at least, they were not inattentive to literature. One valuable result would have been, that many important works now lost would have been preserved.

Only one work is now known to exist impressed in the manner alluded to, though probably others were executed in the same way. It is a translation of part of the New Testament into a very ancient dialect of the German language, and is commonly known by the name of the Gothic Gospels, or the Silver Book. It is deposited in the Public Library at Upsal, in Sweden. This book is composed of very thin smooth vellum, of a fine purple or violet colour, and something of the shape and size of the *Saturday Magazine*. The first three lines of each Gospel, the beginning of the Lord's Prayer, and of any other important passage, and the names of the evangelists, are impressed in gold letters: the rest is all in silver. Much of the volume, in fact nearly a half, is now lost, but more than one hundred and sixty leaves are yet remaining, to show how beautiful the whole must have been when complete, and to enable an artist to judge with accuracy of the means by which the work was done.

Any one who has seen a bookbinder letter the back of a book will have a good idea of the manner in which the Silver Book was executed, for there is no doubt that the processes were very similar. A bookbinder rubs some sticky substance, such as white of egg, on the book he is about to letter, places a leaf of gold upon it, and then takes up a series of heated metal letters, one after another, and presses each in its turn strongly upon the gold leaf. The gold is firmly fixed upon the leather in the places where the impression is made, and the remaining loose gold is wiped off with a rag. This was the old process of lettering, which is still much in use, and this was the way in which the Silver Book was executed, only that silver was used instead of gold, and a cement of an oily nature instead of the white of egg.

Much dispute having arisen as to the reality of this process, Professor Ihre instituted a very minute examination of the Codex in the presence of four literary gentlemen, and came to the conclusion that the work was produced by the impression of metal types. In the first place each letter is respectively so exactly similar in form to every other, that it would be quite impossible for the best writer to imitate its perfect regularity: this argument will be best appreciated by those who have compared the very best manuscripts with any printed book whatever: they must have remarked that in print, from all the similar letters being cast in the same mould, the regularity is indisputable, however defective in other matters the execution may be. The next proof was the tangible remains of the impression: the form of every letter is hollow on the face of the vellum, and on turning to the back of the leaf, it is there found to be convex.

so palpably that the simplest touch will immediately show the place where the type has been pressed down, the margin being quite smooth and the impressed part rough. In a hundred cases the substance of the vellum has been actually cut out by the impression of the tool, while the surrounding leaf is entire. To complete the evidence, a film of a glutinous or oleaginous nature was in many parts perceptible, in a strong light, between the metallic foil and the vellum to which it had adhered.

The only argument now remaining for those who contended that the whole was written with a pen, depended on the assertion that vellum could not be impressed in that way, without wrinkling up and becoming contracted. This was however disproved by Gerard Meerman, who says, in his *Origines Typographicæ*, that his bookbinder tried the process for him, and found it succeed as well with vellum as with leather.

Some fragments of other portions of Scripture have since the discovery of the Silver Book been found in several places, particularly parts of the Epistle to the Romans, in the Library of Wolfenbuttle: these were published by Knittel, who states that they appear to have been impressed in a similar way to those of the Upsal Book. It is curious enough that this language should be the only one in which evident proofs of the practice of this art should be found. It must have been too costly for ordinary use, and perhaps the only persons rich enough to command such expensive luxuries were the monarchs of the conquering tribes by whom the language was spoken.

The history of the Silver Book is curious: it had been lying from an unknown period in the Library of Werden, near Dusseldorf, on the Rhine, until the early part of the seventeenth century, when it was removed to the city of Prague, in order to escape the ravages of the thirty years' war. When that city was taken by Konigsmark, the book came into the possession of the Swedes, and was deposited in the Royal Library of Stockholm. Very soon after this the learned Vossius became possessor of it,—how, it is not known, but he was suspected of having stolen it, while on a visit to Christina, queen of Sweden. Voss took it with him to Holland, where about seven years after it was seen in his possession by Puffendorf, who purchased it for the sum of six hundred rix dollars, on account of the Count Gabriel de la Gardie, by whom it was presented to the Public Library of Upsala, where it still remains.

The language and age of this version of the Scriptures have been still more a subject of dispute than the manner of its execution. It is commonly called Gothic, and supposed to be the translation made in the middle of the fourth century by Ulphilas, bishop of the Goths, who then inhabited the country now called Walachia, on the lower part of the Danube. This is still the usual opinion, but several learned men have called it in question; they argue, and we are much disposed to agree with them, that there is no evidence whatever of its being Gothic, and that the presumption is rather in favour of its being Frankish, because the place where it was found was not inhabited by the Goths but was a portion of the territory of the old Franks. The alphabet is very similar to that of the known existing remains of old Frankish, and two additional characters, found in no other dialect of the German tongue, very nearly amount to a positive evidence of the country and date of the work. Those letters are Ψ and Θ, the first of which, in the Silver Book, stands for *th*, and the last, for *qu*. Now it is stated expressly by Gregory of Tours, a French historian, who lived in the sixth century, that Chilperic, king of the Franks, ordered four letters to be added to the alphabet of their language, and the two letters given above are among the four. As the use of these letters ceased with the life of the monarch who introduced them, the date of the book, if this opinion be well founded, may be ascertained within a short period, Chilperic having died in 584, after a reign of seventeen years. Perhaps in this, as in many other disputes, there may have been truth on both sides; the translation may have been that of Ulphilas, and the copy now existing impressed by a Frank of the time of Chilperic. The language of all these tribes was the same. Procopius in the sixth century, and still more positively Walafrid Strabo in the ninth, asserts this; his words are, "The Goths or Getes who dwelled in the provinces of Greece, when converted to the faith of Christ, used our language, that is the Theotisc . . . they had the Scriptures translated into their own tongue, copies of which are yet in existence." The word Theotisc is nearly identical with Teutsch, the name by which the Germans designate their country and language to this day: and the Franks used a cognate language even in France, as late at least as in the days of Charlemagne.—Whichever way the question may be decided, it must be admitted that the Silver Gospel is one of the oldest books and most curious remains of ancient art known to be in existence.

A fac simile of part of a page of the Silver Book is given at the head of this paper. The four lines shown contain the twenty-fourth and beginning of the twenty-fifth verses of the eleventh chapter of Saint Matthew, with the exception of the first syllable of the twenty-fourth verse, which is in the preceding line, not copied here. The twenty-fifth verse being the beginning of a new subject or section is headed with gold in the original, shown in the fac-simile by dotted letters. The transcription in Roman letters and literal translation will stand thus, supplying the few letters at the beginning and end to make complete sense:—

[Þwe] thauh qwiþa izuis thatei airthai	Truly I say to you that for the earth
Saudamge sutizo wairthith	of Sodom better it shall be
in daga stauos thah þus.	in the day of judgment than for you.
Inuh gainamma meiz andhaf [Iasus].	In that time [Jesus] answered.

The bottom of the page has been selected for the purpose of showing the ornamental mode of exhibiting what appears to be the parallel passages. The letters RI, on the left of the colonnade, stand for 110, being the number of the section, as at that time the New Testament had not been divided into chapters and verses. The monogram in the first arch, composed of M surmounted by Ψ (th), stands for Matthew, and the letters under it for 109, 110. In the next arch stands JOH, and in the third LUK, with the letters RIB, meaning 112; in the fourth arch is the monogram ⅋ for Mark. All these letters are of gold; and the effect of the whole, combined with the purple hue of the vellum, is a degree of magnificence which could not have been expected in a work executed at such a period, and which is not often surpassed in our own day of splendid typography.

THE present life overcomes futurity, by being daily with us, as a small object near the eye can shut out the most magnificent prospect beyond.—AIKIN.

To play with important truths, to disturb the repose of established tenets, to subtilize objections, and elude proof, is too often the sport of youthful vanity, of which maturer experience commonly repents. There is a time when every man is weary of raising difficulties only to task himself with their solution, and desires to enjoy truth without the labour or hazard of contest.—DR. SAMUEL JOHNSON.

FABLES were suffered to float vaguely through the popular mind of the ancients, but of religious instruction, in our sense of the words, no trace is to be discovered, except amongst the Jewish nation.

IF the evidence of revelation had been weak, why were minds like those of Locke, of Bacon, and of Newton, which boldly destroyed prejudices in science, blind to those in religion?—LORD TEIGNMOUTH.

LIGHT AND DARK MORNINGS.

In the pages of that once almost universal Kalendar, the venerable *Vox Stellarum*, which still annually announces itself as "containing all things fitting for such a work," under the undying editorship of "Francis Moore, Physician," who, regretfully be it spoken, yet holds his oracular sway over the minds of thousands, many of your readers will have noticed a column headed "clock before the sun," or, "clock after the sun." It is well known that a sun-dial and a well regulated clock seldom indicate precisely the same time; and the information contained in the undying editor's table of "the equation of time," is duly appreciated by those who wish to regulate their clocks or watches.

It is not my purpose to give a long or learned dissertation on the subject of the "equation of time*," or to explain at much length the different terms used for denoting time's admeasurement. There is solar, or apparent, time, as shown by a sun-dial; and there is mean time, or true time, as shown by the clock. There is the sidereal day, that is, the time of the earth's revolution on its axis, or the time that elapses between the southing of any star to-night and its coming to the meridian, or southing, the next night, which is 23 hours and 56 minutes; and there is our solar day of 24 hours, that is, 24 hours, on an average, throughout the year.

Then we have the astronomical day, commencing and terminating at noon, computed by 24 hours, (not 12 and 12, as in the solar day;) thus October 12th 16h. 30m. of astronomical time, means ½ past 4 of the morning of the 13th by the ordinary mode of computation; and we have the original, the primeval day, commencing and terminating in the evening, as in the language of Holy Writ, "And the evening and the morning were the first day," which mode of computation is still observed by the Jews, their sabbath terminating on the evening of our and their "seventh day, which is the sabbath of the Lord." At this time, 6 o'clock in the evening, they reopen their shops, which have been closed since 6 o'clock of Friday, and again commence business for the remainder of the Saturday evening, closing them during the Sunday; thus "losing," as some will term it, two days in the week, by continuing to observe their own, as well as the Christian sabbath. May the day speedily approach when they shall come into the true sheepfold.

When at school, we were rightly instructed that, "the sun sets as much after 6 as it rises before, or as much before as it rises after." This is worth remembering: and to such of our younger readers as are not familiar with the rule, we recommend a second perusal. But it applies only to 6 o'clock *solar* time, and not to *true* time: for a person who should suppose, on the 13th of October, for instance, and the 1st of March, (these two days being of equal length,) that the sun will rise at the same time, on each day, by the clock, would find himself just half an hour wrong in his reckoning; as a reference to any Almanac that gives the sun-rise and sun-set in *true*, not *solar*, time, will immediately convince him.

There are only four days in the year on which the clock and sun coincide, viz,—the 15th of April, the 15th of June, the 1st of September and the 24th of December; and the times of greatest variation are the 10th of February, when the clock is 15 minutes *before* the sun, and the 2nd of November, when it is 16¼ minutes *after* the sun; thus making a difference of half an hour between the two extremes. And to this, as the cause of our "light" or "dark" mornings or evenings, it is my wish to direct the attention of the reader.

It may be seen by referring to any table which gives the time of sunrise and sunset at London, that on the 21st of February and the 21st of October, the sun rises at 52 minutes after 6, *solar* time; now both days being of equal length, (10 hours and 16 minutes,) the sun of course rises at the same hour, *solar* time, each day; and according to the rule previously mentioned, he must set 52 minutes before 6 *solar* time, but if we take the time by the clock, we shall find that he rises half an hour later on the 21st of February than on the 21st of October; for in February the clock is 14 minutes *before* the sun; and consequently, by clock time, he rises 6 minutes after 7, and the mornings are "dark." In October, on the contrary, although the day is the same length, yet the clock being 16 minutes *after* the sun, he rises 36 minutes after 6; and the mornings are "light," and at this season of the year, early risers reap a decided benefit from the phenomenon of nature.

Early rising! Oh that we had more practical acquaintance with this blessing, that we were more alive to the beauties and melodies of the "sweet hour of prime," that we more frequently compelled ourselves to taste the pleasures so rapturously described by the poet,

> The morn is up again, the *dewy* morn,
> With breath all incense, and with cheek all bloom,
> Laughing the clouds away in playful scorn—

To a contemplative mind, and a lover of nature—to one who

> Looks through nature up to nature's God.

the theme is inexhaustible. With heart and soul he adopts Beattie's beatific outburst to the "melodies of morn;" as, with emotions known only to him who can lift his eyes to heaven and say "My Father made them all," he exclaims

> But who the melodies of morn *can* tell?
> The wild brook babbling down the mountain side;
> The lowing herd; the sheepfold's simple bell;
> The pipe of early shepherd dim descried
> In the lone valley; echoing far and wide
> The clamorous horn along the cliffs above:
> The hollow murmur of the ocean tide;
> The hum of bees; the linnet's lay of love;
> And the full choir that wakes the universal grove.

And, adopting the same writer's description of the beauties of morning, say,

> Oh how [can I] renounce the boundless store
> Of charms which nature to her votary yields?
> The warbling woodland, the resounding shore,
> The pomp of groves, the garniture of fields;
> All that the genial ray of morning gilds?

Gentle reader! excuse this digression; and, with one more extract, I will return to the subject of my paper: it is from the pen of a pious lawyer, when, descanting on "the drops of dew hanging from every blade of grass, and reflecting the rays of the sun in a thousand different directions," he says:—"Not a sound was heard, nor a leaf moved, whilst the secret operation was advancing: and what a pleasant emblem does this afford of the influences of the Holy Spirit. How mild, how gentle, how imperceptible have its effusions often been upon our minds!"

To return: it will be seen from what has gone before, that, when the clock is before the sun, the mornings are "dark" and the evenings "light;" and when the clock is after the sun, the mornings are "light," and the evenings "dark." In fact the "equation of time" causes such a variation of time between the clock and the sun, that, on two days of the year, of precisely the same length, the sun may rise half an hour earlier one day than on the other. See 1st of February and 10th of November.

In May and August the equation is reversed; but the variation being less, the phenomenon is of course not so striking.—*From a Correspondent.*

Those that with diligence fight against poverty, though neither conquer till death makes it a drawn battle, expect not, but prevent, their craving of thee: for God forbid the heavens should never rain till the earth first opens her mouth; seeing some grounds will sooner burn than chap.—Fuller.

* See *Saturday Magazine*, Vol. XIV., p. 89; Vol. XV., p. 151.

ON CHESS. XXIII.

THE KNIGHT'S MOVE, *(concluded.)*

WHEN the method of solving the problem of the knight's move, as stated in our last article, is thoroughly understood, the young chess student may pass on to that which constitutes the peculiar feature of Dr. Roget's method, and which confers on it that generality and comprehensiveness never before attained: viz., the power of *ending* as well as of beginning on any *given* square, provided, of course, that the two squares be of opposite colours. When the two given squares are named, the player must attentively notice to what systems they belong: whether both are in diamond systems or in squares, or one in a diamond and the other in a square: also, if both are diamonds, whether the two form parts of the *same* diamond system or not. The determination of these points will decide the mode of procedure. If the two squares belong to the same system, we must depart from one of the instructions given in the last article: we must not complete that system before passing to another, because one square belonging to it is to be the very last of the 64. We must therefore pass on to another system before completing the first one, and it is optional to leave as many as we please, to assist in forming links to conduct to the terminal square. Dr. Roget recommends that one or two squares of the system should be left to the last, but we incline to the opinion that it will be better to leave a greater number,—that is, after covering two or three squares of that system to which the initial square belongs, pass on to the other three systems successively, complete the 48 squares of which they consist, and then cover the remaining 13 or 14 squares of the first system. We will illustrate this by a problem. Required: to commence at the king's rook's square, and to terminate at the king's bishop's 6th square. These two squares belong to the same diamond system; consequently we must pass on to another system before completing this one. In the diagram (fig. 5) we begin at the rook's square, and cover only two squares of the diamond system to which it belongs: we then pass on to a square system, the 16 squares of which we complete; after this we traverse the 16 squares of the other diamond system, and then the 16 of the other square; finally, we cover the remaining 14 squares of the first diamond system, and end at the required position.

If the initial and terminal squares are respectively in the two diamond or the two square systems, another modification is required, arising from the circumstance that the knight cannot pass from one diamond system to the other, nor from one square system to the other. Let the initial square be in one diamond system, and the terminal square in the other. Complete the first diamond system; then one of the square systems; then traverse a *portion* of the second diamond system, omitting that square which is to be the terminal square, as well as some others; after this, cover the second square system; and lastly, traverse the remainder of the second diamond system, ending on the required one. By transposing the words "square" and "diamond" in this description, it will be available for that variety of the problem which begins in one square system and ends in the other.

If the initial square be in a diamond system and the terminal in a square one, or *vice versâ*, the solution is easier than in either of the cases before supposed; because all the four systems can be completely traversed in succession, by bearing in mind that the *second* system traversed must not be that which contains the terminal square.

We have endeavoured to impress on the mind of the reader, that attention to the respective *systems* in which the initial and terminal squares are contained, is the point of most importance in giving a general solution to the varieties of this problem. When this is once attended to, minor difficulties are more readily surmounted. Among these are, the quarter of the board on which the terminal square is situated. Not only must the tour of the knight, in a given problem, end in a particular system, but also in a particular quarter of the board; and as the tour may generally be made from left to right or from right to left at pleasure, we must choose that direction which, while it obeys the conditions of the problem as to systems, shall terminate in that quarter which contains the terminal square. We may illustrate this by referring again to fig. 5. The terminal square is in the right hand upper quarter. After covering 2 squares of the first diamond system, and then traversing the 48 squares which constitute the other three systems, we find the knight in the left hand upper quarter, only two squares distant from the terminal square; and as we have still 14 moves to make, we manage to go into all the other three quarters of the board before arriving at that one which contains the terminal square. In every instance, if the rules which we have given are attended to, and any difficulty arises towards the end of the tour, a reconsideration of a few of the last moves will enable the player to surmount the difficulty. The moves which it is in the power of the knight to make at any given moment, varying from one to eight in number, give such interminable variety to the modes of solution, that the judgment of the player must be exercised as to the choice of the mode of proceeding in each particular instance; but it is only in the last few moves that this judgment is particularly called for, provided the prescribed rules are attended to. Of the number of ways in which the problem can be solved no estimate has yet, as far as we are aware, been made; nor do we know of any means but actual trial by which it could be determined, since the regular arithmetical law of permutation will not here apply. If the squares of the board were numbered from 1 to 64, and these numbers were noted down in the order in which the knight moved, we have very little doubt that this order might be varied in more than a *million* different ways; there are $64 \times 32 = 2048$ modes of varying the initial and terminal squares alone; and in each mode the intermediate moves are susceptible of variation at almost every step of the process.

Such is the result to which Dr. Roget's extremely ingenious investigation enables us to arrive. Until his method appeared, no one, we believe, was able to insure a solution to the problem when both the initial and terminal squares were prescribed; except in the limited instance of a re-entering route, where the terminal square is a knight's move distant from the initial one. By the method which we have just endeavoured to explain, the problem can be solved whether the terminal square be far removed from the initial one, or contiguous to it; the only condition being, that the squares must be of different colours.

To shew the interesting variety of which this problem is susceptible, we will here give three additional representations, each of which possesses some peculiar property capable of being committed to memory: they are partly original, and partly altered from methods already known; and the whole of them differ from Dr. Roget's mode of solution. Fig. 6 is produced by attending carefully to this one simple rule:—*Keep as far from the centre of the board as possible.* In obedience to this direction, the tour of course commences in one corner, no matter which, and every successive move is determined according to the distances, from the centre of the board, to those squares open to the knight; the greatest distance being always chosen. It might appear from this rule, that the terminal square ought to be still nearer to the centre of the board than it is seen to be; but it will be found that in the course of the preceding moves, the four central squares have necessarily become occupied; since

Fig. 5

Fig. 6

Fig. 7 (a).

it happens in some cases that there is only one square left open to the knight, and that one may probably be near the centre of the board. No difficulty will occur, provided we adhere strictly to the one rule laid down.

Fig. 7 is produced by adhering to the following rule: ***Play the knight to that square where he has least power.*** Supposing the board to be unoccupied except by the knight, the reader can easily satisfy himself, that the knight can command 2, 3, 4, 6, or 8 squares, according to his position: if in one corner, he commands only 2 squares; if he be on the knight's square, he commands 3 squares; if on the bishop's square, 4 squares; and as he approaches the centre, the squares commanded are 4, 6, or 8 in number. Now the rule requires, that in every instance the square chosen for the knight's leap be that which, of all those remaining open to the knight, will give him least power. If at any move there are two open squares of equal power in this respect, either one may be chosen. In many points this solution resembles the last, since, generally speaking, the knight has "least power" when "farthest in the centre;" but a comparison of the two figures produced will show that the routes are by no means identical.

Fig. 8 (*a*) is possessed of a most remarkable numerical property, and belongs to a class of problems which would be found fertile in interesting combinations. In order to exhibit this property, we have in a separate diagram or table, fig. 8 (*b*,) numbered the squares in the order in which the knight stepped on them. The tour commences on one of the central squares, which we have marked 1, and terminates on the king's bishop's third, which is therefore marked 64. Now it will be found, that if we select two squares on opposite sides of the centre, and equidistant from it, the *difference of the two numbers occupying those squares will be always equal to* 32. Thus, the opposite corner squares are 16 and 48, 27 and 59; and $48-16=59-27=32$: the four central squares are 1 and 33, 14 and 46; and $33-1=46-14=32$. In the same way we may select any two squares, provided the centre of the board is precisely

Fig. 8 (*a*).

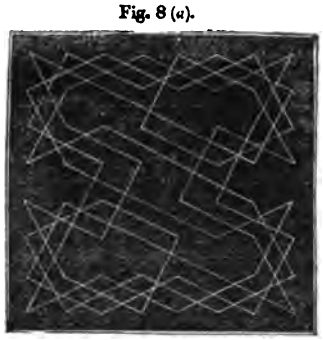


Fig. 9 (*a*.

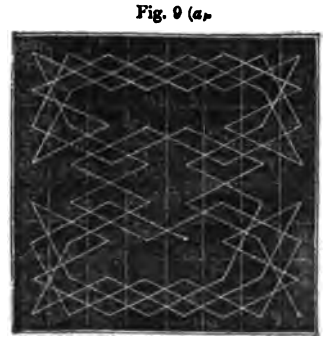


Fig. 8 (*b*.)

48	55	4	29	10	53	6	27
3	30	49	54	5	28	11	52
56	47	32	9	50	13	26	7
31	2	57	46	33	8	51	12
44	19	40	1	14	25	34	63
39	58	45	18	41	64	15	24
20	43	60	37	22	17	62	35
59	38	21	42	61	36	23	16

Fig. 9 (*b*.)

17	8	43	38	15	10	45	30
42	39	16	9	44	37	14	11
7	18	41	48	5	12	35	46
40	49	6	19	34	47	4	13
29	20	63	50	3	22	33	60
62	51	28	21	64	57	2	23
27	30	53	60	25	32	55	58
52	61	26	31	54	59	24	1

between them, and equidistant from them, and we shall find that the smaller number subtracted from the greater will invariably leave 32.

There are other remarkable circumstances connected with this last solution. The route is a re-entering or interminable one, and the figure produced, as seen in fig. 8 (*a*,) is one of the most symmetrical which we have yet given. The route being interminable, may be commenced on any square, and as the initial square must always be marked 1, the distribution of the numbers over the board would vary with the varying of the initial square, every square being affected alike. Now it will be found, that at whatever square the route commences the same numerical law will hold good; there will in fact be 128 modes of varying the order of the numbers, in all of which the same figure will be produced, and the same remarkable law will be observed; because any square out of the 64 may be selected as the initial square, and from each we may begin the route either to the left or the right.

Another example of the maintenance of a particular law throughout the numbers obtained, we will here give

in order to shew the reader how varied may be the results to which he can arrive by a little ingenuity. Fig. 9 (*a*,) is a very pleasing and symmetrical figure, produced by a route of which the numbers are entered in fig. 9 (*b*). If these numbers are examined, it will be found, that the difference of two numbers situated on opposite sides of the centre, and equidistant from it, is 16,—half the amount of constant difference in the last case. This route is not a re-entering one, and we do not think it could be made so, with a constant difference of 16.

The reader will now have had sufficient proof of the diversified solutions of which the knight's problem is susceptible. We have never heard of a chess kaleidoscope, but the instructions we have given will enable him to form one out of the numerous other modes of solution which may be left to his ingenuity to produce. Nor will the study of this subject be without its use to the chess-player; since it not only teaches the art of manœuvring this beautiful piece, but brings the fact into forcible notice, that the knight has less power of moving, and therefore becomes less valuable, when he approaches the corners and sides of the board.

SACRED LITERATURE.

DIVINITY and ethics are the centre round which the national literature of a great, a thoughtful, and enduring people, must ever revolve. The subject-matter of these sciences alone possesses an interest sufficiently steady and intense, to give birth and impart active purpose to great ideas. The literature which rests on taste and manners, is dependant for its charm on those peculiarities which gave it existence. The literature of mere sentiment springs up and perishes, annually, before the sated eye, like other sickly productions of the hot-bed. The literature of classical research is intelligible to few, and being deficient in applicability to the practical realities of life, is almost limited in value to the charm of an exquisite amusement. The pursuits of natural science, though in the highest degree useful and pleasant to man, as inhabiting the world of sense, regard merely his external accommodation, and, with their results, will disappear when "all these things shall be dissolved."

But the literature of divinity and ethics is liable to none of these objections. Rooted, not alone in the truth of things (which is the essential ground of all literature, worth the name), but in Deity itself, its pure themes are fit to be adorned, and never can they be exhausted, by the loftiest inspiration of genius. Not concerned in the external welfare only, and present interests, of mankind, but with men's inmost and immortal well-being, it has a practical value which cannot be over estimated. Making no severe demands upon intellect, no rarer qualification is needed for enjoying it, than ordinary sobriety of mind. Dependant on nothing fluctuating, it possesses equal charms for the wise and good of every period, age, and condition. Whatever is sublime in thought, may be met with in the pages of our sacred writers. Whatever is rich, powerful, noble in elocution, their high majestic themes demand, and have received from them. Whatever is strict in logic and cogent in argument finds here a place and application. Minds of the most various altitude and construction here expatiate in an apt and ample field. The abysmal simplicity of St. John, and the fervent ratiocinative energy of St. Paul,—the eloquence of Chrysostom, and the warmth of Augustine,—the affectionate sweetness of a Leighton, and the exhaustive vigour of a Barrow,—find here more than commensurate employment.

So attractive and absorbing, so high and central are the subjects which this department of literature presents, that all great writers, in proportion as they approach those altitudes of conception and expression, their being able to reach which, marks them great, rush into it, and become, at least for a time, moral and theological teachers. Shakspeare in his most earnest moments was a divine and moralist; Addison and Johnson were often professedly such; to the same sphere the genius of Wordsworth, and even sometimes of Scott,

Repairing, in their golden urns drew light.

Introductory Essay to Gems of Sacred Literature.

GARDEN HERBS.

TANSEY.

Tanacetum vulgaris, or common tansey, is a well-known native plant. It belongs to the Corymbiferous tribe of the natural order *Compositæ*, and is common in the banks, hedges and borders of fields in most parts of the middle of Europe, and very frequent in England. Linnæus enumerates eight species of this herb. The common yellow-blossom tansey, of which there are three varieties, is said to be a native of Britain. The English name of this plant is either an abbreviation of the Latin, or is derived from the French name, *Tanaise*.

This herb may often be seen growing in churchyards, and it is probable that it was once used as a funeral plant. Boerhaave informs us that the leaves intruded into the mouth and nostrils of a dead body preserve it from decay, and from the attacks of insects; whence the plant has been called *Athanasia*, or the immortal. It is also stated that if meat be rubbed over with tansey the flesh-fly will not deposit its eggs in it.

Tansey has a bitter taste, and an aromatic smell; it was formerly held in regard for warming and strengthening the stomach, for which reason the young leaves obtained a place among culinary herbs, their juice being used in puddings. In Gerard's time they made cakes of the young leaves in the spring mixed with eggs, which were called tansies; "these," he says, "be pleasant in taste and good for the stomache: for if any bad humours cleave thereunto, it doth perfectly concoct them and carry them off. The root preserved in honie or sugar, is an especial thing against the gout, if everie day for a certaine space, a reasonable quantitie thereof be eaten fasting." Boerhaave says: "This balsamic plant may supply the place of nutmegs and cinnamon. For I believe Asia does not afford a plant of greater fragrancy than tansey."

Notwithstanding this high praise, tansey is now but rarely used as a domestic vegetable; our habits, customs, and diet are not those of our forefathers, especially in those times when the season of Lent was strictly observed as a fast. It was then a common practice to make cakes at Easter, of flour, eggs, and the tender leaves of tansey, and these were not only greatly prized, but were thought necessary to be eaten at that season in particular, to relieve the stomach of the real or imaginary ills occasioned by a continued diet of fish and pulse. The custom of eating these cakes at Easter only is greatly censured by Culpeper:—

> The world (says he) being overrun with popery, a monster called superstition perks up his head, and, as a judgment of God, obscures the bright beams of knowledge by his dismal looks; (physicians seeing the pope and his imps selfish began to be so too), and now, forsooth, tansies must be eaten only on Palm and Easter Sundays, and their neighbour days. At last, superstition being too hot to hold, and the selfishness of physicians walking in the clouds; after the friars and monks had made the people ignorant, the superstition of the time was found out by the virtue of the herb hidden, and now it is almost, if not altogether, left off. Surely our physicians are beholden to none so much as they are to monks and friars. For want of eating this herb in spring, makes people sickly in summer; and that makes work for the physician. If it be against any man or woman's conscience to eat tansey in the spring, I am as unwilling to burthen their conscience as I, am that they should burthen mine; they may boil it in wine and drink the decoction—it will work the same effect.

Tansey is perennial: it may be easily propagated by seed, and also by parting the roots in spring, and planting them in any sort of light soil or situation.

CHERVIL.

Sweet chervil, or sweet cicely, groweth very like the great hemlock, having large spread leaves cut into divers parts, but of a fresher green colour than the hemlock, tasting as sweet as the aniseed. The stalks rise up a yard high, or better, being cressed or hollow, having leaves at the joints,

but lesser; and at the tops of the branched stalks, umbels or tufts of white flowers; after which come large and long cressed black shining seed, pointed at both ends, tasting quick, yet sweet and pleasant. The root is great and white, growing deep in the ground, and spreading sundry long branches therein, in taste and smell stronger than the leaves or seeds, and continuing many years.

Such is the old Herbalist's description of *Chærophyllum sativum* (natural order *Umbelliferæ*), of botanists. This herb was called Χαιρεφυλλον by the Greeks, either from its numerous leaves, or as the old herbalists suppose from the joy and gladness which they affirm the leaves of this plant produced in those who ate them. The Romans adopted the same word, and called the herb *Chærophyllum*, and in most of the modern languages of Europe, the name of this vegetable is derived from the same source; the Dutch call it *Kervell*, the Germans *Korffol*, the Italians *Cerefoglio*, the French *du Cerfeuil*, and our oldest botanists write it *Cheruill*.

Chervil is a native of the Levant, and various parts of Europe, and is sometimes found in its native state in this country. When young it somewhat resembles parsley; but as it runs to seed, it bears more the appearance of hemlock. The tender leaves are grateful to the palate, especially when used in soups and salads. It is much cultivated by the French and Dutch, who are so fond of it, that they scarcely ever omit it in their soups and salads: and it is considered to be a milder and more agreeable addition to seasonings than the parsley, so generally used by English cooks. Gerard, about two hundred years ago, had an extensive garden in London, in that part of Holborn now called Hatton Garden, and in his *Herbal* he says:—"The great sweet cheruill groweth in my garden, and in the gardens of other men who have been diligent in these matters." He recommends the roots of this plant to be first boiled, and then eaten with oil and vinegar, "which is very good for old people that are dull and without courage; it reioiceth and comforteth the heart, and increaseth their strength."

We select from Mr. Rogers' *Vegetable Cultivator* the method of rearing this useful plant; Chervil is annual, and the seed should be sown to keep up a succession, from the beginning of March till June, at the intervals of about a month, as the younger it is the higher flavour it imparts.

The seed may be sown in shallow drills, from six to nine inches apart, and covered over lightly with the mould; it can also be sown broad-cast and raked in lightly and evenly. If the plants rise thick, a slight thinning will be necessary; and in dry weather a little water will be useful.

To have chervil for use throughout winter, it should be sown towards the end of August in a three or four foot bed, which may be hooped over and the plants protected with mats in frosty weather. The plants remain where sown, and are never transplanted. They are proper for gathering when the leaves are three or four inches in growth, and must be cut off close; they will shoot up again, and may be gathered in succession, though the plants of the spring and summer sowing soon spindle up into seed-stalks, ceasing to produce young leaves, which are the useful parts.

THE WATER-OUZEL.

Cinclus aquaticus.

The remarkable appearance and habits of this bird have excited much popular as well as scientific attention; and as it is very generally dispersed over Europe and capable of enduring all climates, so large a variety of names have been applied to it as frequently to embarrass the student who may desire from books to add to the knowledge gained by observation in the haunts of nature. In Wales this bird is the *Mwyalchen y dwfr;* in the Scotch Highlands the *Gobha uisge;* in England it is called the *Water ousel*, the *Dipper*, the *Penrith ouzel*, the *Water crake*, the *Water crow*, the *Water colly*, the *Bessy Ducker*, and some other names. The Scotch call it the *Water pyet*, the *Water craa*, &c.

The Water Ouzel belongs to the dentirostral division of Cuvier's great order Passeres, and to the thrush family in that order. The bird is dumpy in appearance, but full of energy and activity. The bill is slender, the head and the forehead low; the body is short and compact, the wings short and rounded; the tail is also short, but very thick and strong. Its plumage is thick and close, like that of aquatic birds, and though the bird remains long in the water its plumage does not become wet. The colour of the bird on the head, back, and sides, is deep brown; the rest of the upper part, black: the tail feathers and quills are also black; the throat and breast are white, shading off into reddish-brown towards the under parts, and gradually becoming deeper in hue towards the extremity of the tail: the bill is dark brown, and the feet yellowish-grey. The markings are nearly the same in both sexes. The markings in the young birds appear to be subject to variation.

The water ouzel loves to haunt the rocky wilds of almost any northern clime; it seems not to care for the vicissitudes of heat and cold, and provided it can be near water that is not frozen it is cheerful and happy. The deep and rugged channels worn by the mountain streams which dash on against opposing rocks, or amidst loose stones, are the favourite resorts of the water ouzel.

> . . . . . The bird
> Is here,—the solitary bird, that makes
> The rock his sole companion. Leafy vale,
> Green bower, and hedge-row fair, and garden rich
> With bud and bloom, delight him not;—he bends
> No spray, nor roams the wilderness of boughs,
> Where love and song detain a million wings,
> Through all the summer morn—the summer eve;—
> He has no fellowship with waving woods,—
> He joins not in their merry minstrelsy,—
> But flits from ledge to ledge, and through the day
> Sings to the Highland waterfall, that speaks
> To him in strains he loves, and lists
> For ever.—Carrington.

The habits of the water ouzel are retiring: when it becomes observed by the traveller, it flits from stone to stone, chirping and appearing as if incapable of flight. If pursued it appears scarcely to make an effort to avoid capture, and yet it is seldom or never captured. The traveller, secure of his prey, gives chase; the bird is almost within reach; it flirts its tail, and every now and then jerks round, as if half astonished, half inviting.

So onward they fare (says the writer of the agreeable sketches of the *Feathered Tribes of the British Islands*) till they come to a bolder and tougher stratum, which has obstructed the stream, but at the same time given it fall and force to scoop out a pool below, which though it boils where the cascade plunges (or rather where it rises again), is placid compared with the brawlings that have been passed. The water merely laves a beach of clean pebbles, the rocks on the other side are "sky high," without footing even for a bird, and the *breast*, over which the water dashes, seems too high for a thing so hopping and badly-winged. The bird halts on the beach, and forward the traveller rushes, hat in hand, to the capture, but the wet stones are treacherous, endlong he falls, dips himself, and rising sees the hat which was to capture the bird, whirling round and round in the eddies. The bird too has vanished—it is "a sprite" to wile him into peril. But it soon "bobs" to the surface, at the lower end of the pool on the other side, with its feathers dry without any shaking of the water, and leaping first on one stone and then another, it descends the ravine with the same nonchalance that it ascended. To recover the hat is a much more arduous matter than to lose the bird, but that too may be accomplished with one of the long suckers of hazel, which grow from the tangled and gnarled stool on the bank, though if the hold be not taken warily, and kept carefully, there may be a second dipping—and yet no dipper to boast of.

The manner in which the water ouzel seeks its food is very remarkable, and does not seem to have been gene-

rally known until the communication of M. Hebert to the Count de Buffon excited the attention of naturalists.

I lay ambushed (says he) on the verge of the lake Mantua, in a hut formed of pine-branches and snow, where I patiently waited till a boat, which was rowing on the lake, should drive some wild ducks to the water's edge. I observed without being perceived: before me was a small inlet, the bottom of which gently shelved, and might be about two or three feet deep in the middle. A water ouzel stopped here more than an hour, and I had full leisure to view its manœuvres. It entered into the water, disappeared, and again emerged on the other side of the inlet, which it thus repeatedly forded. It traversed the whole of the bottom, and seemed not to have changed its element, and discovered no hesitation or reluctance in the immersion. However, I perceived several times, that as often as it waded deeper than the knee, it displayed its wings, and allowed them to hang to the ground. I remarked too that when I could discern it at the bottom of the water, it appeared enveloped with air, which gave it a brilliant surface, like some sorts of beetles, which are always in water, enclosed with a bubble of air. Its view in dropping its wings on entering the water might be to confine this air: it was certainly never without some, and it seemed to quiver: these singular habits of the water ouzel were unknown to all the sportsmen whom I talked with; and perhaps without the accident of the snow-hut I should have ever been ignorant of them; but I can aver that the bird came to my very feet, and, that I might observe it, I did not kill it.

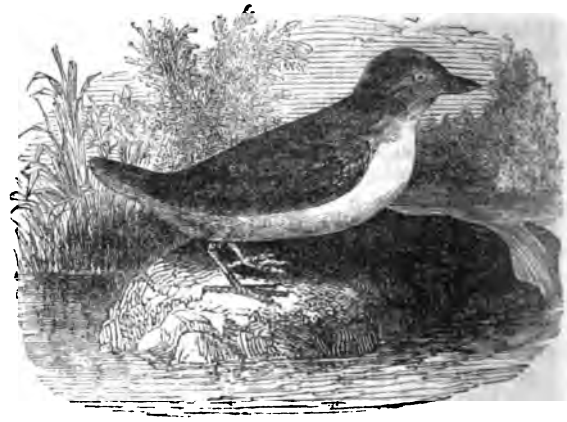
The quivering motion of the wings spoken of in the above extract is simply an upward stroke tending to keep the body down, in opposition to any difference in gravity between the bird and an equal bulk of water. As soon as the bird enters the water it elevates its head and raises its wings, and thus depresses the body; and this is done so easily and so rapidly that the bird runs down the bank to the bottom of the stream with apparently no greater effort than would be required for simple motion on dry land. A moment's reflection will make it appear less wonderful that a bird should be able to remain beneath a fluid which, bulk for bulk, is heavier than itself, than to sustain itself in the air, which, bulk for bulk, is so very much lighter than itself. In flying, the bird sustains itself by the downward stroke of t e wings, and the water ouzel pursues its food in the water by adopting a process the very reverse of flying.

This bird feeds on water insects, larvæ, worms, dragon flies, water beetles, and most of the animal substances which occur in water. It delights in those little pools between the rapids where the trout deposits its spawn: this, as well as the spawn of the salmon, is a favourite food for the water ouzel and its young. When the banks are covered with snow, and most other birds are to a great extent deprived of the means of procuring food, the water ouzel, perched on a stone in the brook, sings to the tune of many waters, and fears nothing but ice, which locks up its source of food, and deprives it of its retreat from terrestrial dangers. But as soon as the ice has disappeared, it is again independent and happy. It is not often, however, that the bird is "frozen out," because it prefers the dells among the secondary hills near the low country, where springs occur which, breaking out from a considerable depth, seldom freeze, and in which the young of many little animals supply it with food.

The water ouzel breeds early in the season; the eggs are of a beautiful white, and not more than five in number. The young birds are of quick growth; they are great feeders and are constantly chirping after food in the absence of their parents. The building of the nest is begun early in the season; it is constructed with much labour, and is formed on the outside generally of moss, which is kept green by the moisture of the place, so that it has the appearance of a natural mossy tuft: it is lined with such dry leaves or fibres as the place affords: it is covered with a sort of dome, and has an opening in the side. The situation of the nest is often under a projecting stone in a hole of the rock, or even in a hole in a wall, provided the situation be sufficiently retired and near the water. The structure of the nest, however, differently described by different naturalists, and it m vary according to local circumstances. Mr. Ren speaks of having found a nest of this bird at Sorn Cleug in Ayrshire, which he describes as a romantic spo where thickly-wooded rocks of variegated sandstone ri for several hundred feet on each side of a small broo approaching in some parts so near that the sunbeam cannot reach the channel below. By the side of a larg block of sandstone, which had fallen into the strea from the over-hanging cliff, in one of those darkene corners, a pair of water ouzels had built their nest. Th block in its fall had dragged down with it an old moss-grown hazel, whose roots were plentifully clothed with lady-fern, sweet woodroof, and a profusion of green moss. These convenient materials were employed by the birds for the frame-work of their fabric, which was neatly arched over with a withered fern-leaf, and over this was placed a warm coating of green moss with a few chips of the woodroof. The lining was of similar materials, but of finer quality and more smoothly arranged. It was so near the edge of the stream, that it must have been overflowed, had a flood occurred, as is not unusual from its vicinity to the Clomfort range of hills. The water ouzel is said by Bewick sometimes to nestle behind a waterfall, when it overshoots a steep rock, and thus leaves a vacant space; and Mr. Rennie's observation seems to confirm the statement; for he has "watched a pair of these birds flitting stealthily out and in from such a locality at a small linn in the moors above Wemyss Bay, Refrewshire;" but the force of the falling stream prevented him from getting sufficiently near to discover the nest.

Montagu discovered one of these nests under a small wooden bridge in Caermarthenshire: the nest was built with hay, fibres and moss, and lined with dry oak leaves. The nest was captured, but within a fortnight another was constructed in the same place: this was also taken; a third was constructed, and we regret to add that the persevering little architects were a third time plundered. The same naturalist gives another example of a nest which he found in a steep mossy bank projecting over a rivulet; and from the facility with which moss could be procured, the nest so closely resembled a portion of the bank, that it could not have been discovered but for the parent birds being observed carrying in fish to their young.

The water ouzel sings only during the early part of the year: its summer note is but a mere chirp.



The cheerful bird that loves the stream
And the stream's voice, and answers, in like strains,
Murmuring deliciously.

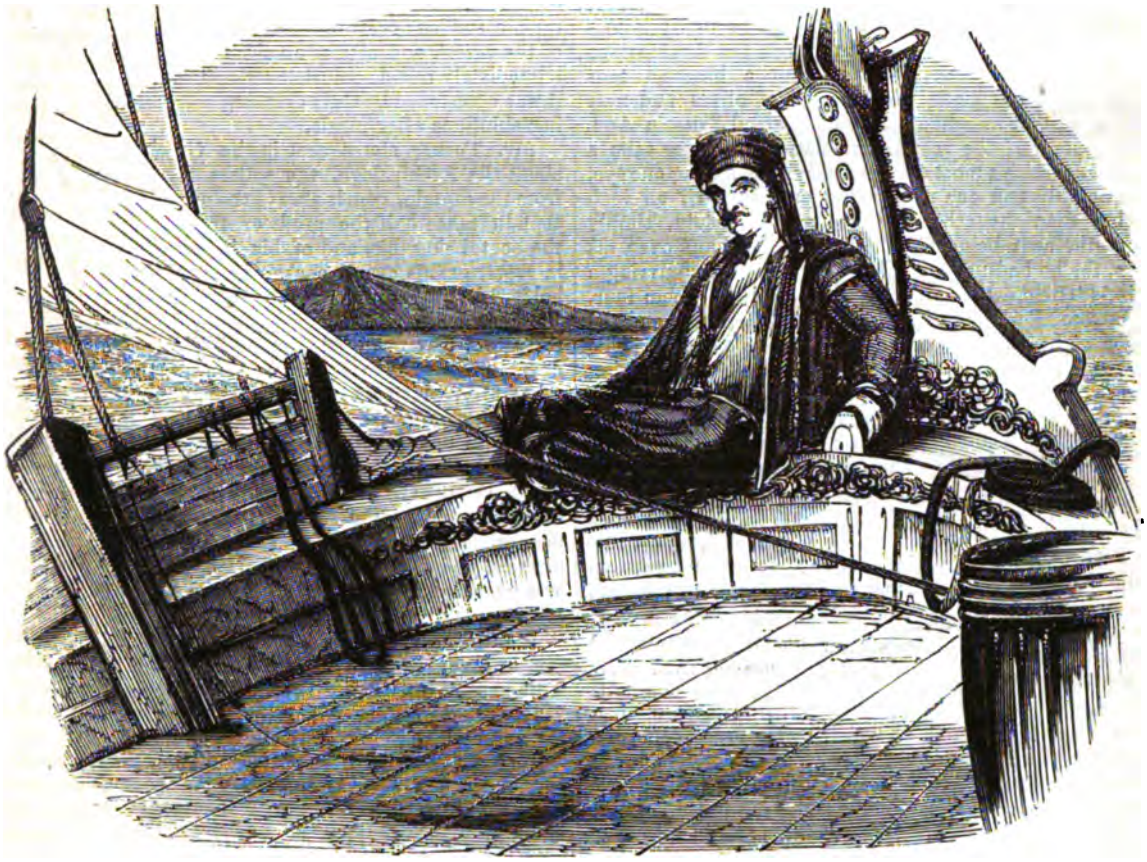
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 607. DECEMBER 18TH, 1841. { PRICE ONE PENNY.

TURKEY AND THE TURKISH PROVINCES.



GREEK BIES, OR CAPTAIN.

THE ARCHIPELAGO, AND ITS MARINERS.

AT the eastern extremity of the Mediterranean a very remarkable arm of the sea bends towards the north; remarkable as forming the maritime separation between Europe and Asia; as being the channel by which Constantinople and the Black Sea are reached; as being studded with a vast number of islands; and as having been in Europe, almost the birthplace of civilization. This is the Ægean Sea; and the islands which stud it form collectively the Grecian Archipelago.

If we examine a map of this region, we see that the whole western shore of Asia Minor bounds it on the east; that some of the Turkish provinces bound it on the north; and that Greece—anciently independent, then under the yoke of the Turks, and now independent again,—forms its western boundary. This portion of sea is about four hundred miles from north to south, and two hundred from east to west. The islands, which are so numerous that they have never been accurately counted, lie scattered over nearly the whole of this sea; some are beautifully fertile and picturesque, producing wine, oil, gums, raisins, figs, silk, honey, wax, oranges, lemons, cotton, &c.; while others are mere barren masses of rock. Of these islands, those whose names are best known to general readers are Samos, Scio, Lemnos, Mitylene, Patmos, Cos, Naxos, Paros, Antiparos, Milo, and Argentiera.

The inhabitants of these islands are a fine, hardy, athletic race, generally good sailors. Their dress consists of a short jacket and waistcoat, without a collar, very full breeches, with a red sash round the waist, a small red cap fitting close to the crown of the head, and shoes resembling our slippers. The legs and throats are generally bare; they wear moustaches, but never beards; and the hair is make to hang back over the neck to a great length. The women are generally beautiful, and their dress simple; when not employed in their household occupations, their time is chiefly taken up with spinning, knitting, and weaving.

It is, however, in a maritime point of view that we are about to consider this singular region. The islands being very small, the inhabitants on each are few in number; and as they are obliged to depend a good deal on each other, it results that much intercourse is maintained from island to island. The Greeks of the Levant have thus become good sailors; and form the principal part of the crews in the Turkish as well as the Greek vessels. Among the vessels here employed, one which is found in that corner of the Archipelago leading to the Black Sea, is the *caique*, a small kind of sloop, with sails, and a few rowers. These caiques are long, narrow, boats, extremely light, and provided with one, two, or three small sails, which are set only in fair weather, or when the wind is not too strong. They are not provided

with ballast, and are so buoyant that a somewhat stiff breeze would overset them, if the boatman did not take care to let go the sail on the smallest danger and to turn the boat by shifting the helm. The caiques belonging to the Sultan are remarkable for their size, their elegance, and the number and dexterity of the rowers; these latter are twenty-eight in number, and are dressed in white.

The vessels that go greater distances are, of course, of larger size, and are better provided with sails. We cannot perhaps better illustrate the nature of such a vessel and of its crew than by following the narrative of a traveller in these seas. Some years ago, Mr. Turner, an Englishman, left Constantinople to go to Syria in a small Turkish vessel, passing through the Archipelago in his way. The vessel was about a hundred tons burden, and was loaded with a cargo of olives and nuts belonging to a merchant of Candia named Tussein Ago. The captain of the vessel was what Mr. Turner calls a *sans souci*, with a most extraordinary face, having one eye, one nostril, and one moustachio at least half an inch higher than the other; he was called captain, simply from the boat being his; he had no command over his men, for he had not the slightest idea of manœuvring a ship. The crew were twelve in number, of whom four, who were Turks, were very inefficient seamen; and the other eight were intelligent and active Greeks. The passengers consisted of about thirty persons, comprising two or three English gentlemen, two Frenchmen, the Candiote merchant and his brother, and several Turks and Greeks. Among them was a very devout Turk, who regularly performed his ablutions and prayers five times a day, and every evening, taking an hour-glass in his hand, sang a prayer for favourable weather, in the chorus of which he was joined by all the other Mohammedans. The Turkish passengers paid from forty to fifty piastres each, for their passage from Constantinople to Cyprus; the Englishmen paid much higher, under an agreement to be provided with board, which proved to be of the sorriest kind. On the day after they started, Mr. Turner was astonished to see all the sails still up, notwithstanding a gale was blowing, which to most seamen would have been a hint to "furl." He represented the danger, but all in vain; for they were excessively angry at his remonstrances, which they said would bring misfortunes upon them, for, "if they were destined to perish, all precautions would be in vain:"—this is an example of the power of the notion of fatalism on the Turkish character. On the same evening a dispute arose among the Turkish passengers:—the merchant Tussein, on account of the cold, wanted to perform his ablutions in warm water; but this the Turkish devotee would not allow to be lawful, insisting that there was no instance on record of Mohammed having so acted. Tussein retorted on the devotee, that he had been praying sitting, which he asserted was not consistent with their religion; but the devotee replied, that he had only done so that evening during the gale, when the ship rolled so that he could not stand on the deck, and that in this case there was a special permission granted to Mohammedans at sea to pray sitting:—thus the dispute ended.

The party landed occasionally at the islands which they passed, visiting the objects most worthy of notice, and then embarking again to proceed on their voyage. The instances of superstition and ignorance which they met with in the crew and passengers were many, and some of them ludicrous; but we will only allude to one or two which relate to navigation, and which obtain great credit among the Turkish seamen. The English travellers having one evening sought to relieve the tedium of the voyage by a game at cards, Tussein came into the cabin and begged them to desist, urging that some misfortune would else surely happen to the ship; and to induce them to believe him, he related a story of what had once happened to himself:—He was once detained at Rhodes twenty-eight days by contrary winds, during which he amused himself by playing cards with the crews of some other ships. The captain, much vexed at the delay, at length said he was sure there must be some cause for the contrary winds; and going down to search the cabin, he found the cards, which he flung overboard in a great rage. Immediately the wind became fair, and they had a very prosperous voyage to Alexandria; but the other ships, three in number, whose crews had not thrown away their cards, were all taken by an enemy's squadron;—that the cards were the cause of the contrariety of the wind, Tussein stoutly maintained. A day or two afterwards, while sailing round a cape, a sudden gust of wind disturbed the equilibrium of the vessel, and also of an old Turkish passenger, who immediately railed against the Englishmen, and said that it was occasioned by their drinking rum, and not performing ablutions after meals.

Mr. Turner states that in the Greek boats trading about the Archipelago, the sailors receive no fixed pay from the captain, who is always the owner of the boat; the captain takes half the profit or freight, on account of the boat being his, and of his being obliged to keep it in repair at his own expense; he then divides the other half with his comrades, taking two shares for himself. For instance, a boat manned by four men, including the captain, has gained one hundred piastres clear, after deducting the expense of provisioning; the captain first takes fifty, which he lays aside to pay for the repairs of the boat when necessary; he then out of the remaining fifty takes twenty, and gives ten a-piece to his three men. In the Idriote vessels, the captain (when owner), after supplying provisions, and paying all expenses, takes half the profit for the ship, and then divides the remainder among himself and the crew, taking two shares for himself, giving two to the boatswain, two to the *scrivano*, or supercargo, one and a half to the cook, and one to each man.

We will now accompany another traveller, Mr. Emerson, in a voyage among the islands of the Archipelago. This gentleman, in his *Letters from the Ægean*, says:—

> There is more intense excitement in sailing by night in the Levant than in any other sea I have ever passed over. There are a thousand possible dangers from sudden squalls, and pirates, and sunken rocks, that keep the imagination on a continued stretch: then the softened azure of the midnight sky is so pure and placid, and its little twinkling stars are so sparklingly reflected in the deep dark sea beneath them; and if, as is seldom the case, it be a night of clouds and darkness, there will follow in the wake of the vessel a long line of phosphorescent light, which heaves and glitters like a stream of lava, till it again subsides into dimness and repose.

Mr. Emerson, after visiting Smyrna, engaged a passage from thence on board a brig, commanded by a Greek, named Panagies Androcopoulo. The vessel proceeded slowly on its voyage, now stopping to let the passengers enjoy the beautiful scenery on shore, now stopping for want of wind to move onwards: sometimes she narrowly escaped being captured by the Greek pirates which infest these seas, and at other times met with small vessels from which sponge-divers were carrying on their hazardous occupation. The captain bore down upon almost every island they came to, in accordance with the arrangement entered into with his passengers; but even without such arrangements, the captains of these small passage-vessels are accustomed to do so, seldom remaining more than eight and forty hours at a time at sea. In this part of the Mediterranean islands are so frequent, that the navigation seems rather inland than at sea. One cluster of islands is never lost sight of till another appears; and as the seamen who traffic from port to port form numerous acquaintances at each, a trip through the Archipelago is, to a Greek, merely a succession of visits to old friends, since he only parts with one in the morning to sup with another at night. This circumstance has a singular effect on the navigation of these parts, for the reis, or captain,

does not trouble himself much about charts or log-books, observations or bearings: his vessel is to him as much a yacht as a merchant-vessel, and his voyage as much one of pleasure as one of business. This tendency in the Greek sailors to land, for enjoyment's sake, whenever an opportunity offers, has been humorously alluded to by a modern writer:—

A merchant, who, sailing from Greece to Trieste,
Grew vexed with the crew, and avowedly testy,
Because, as he said, being lazy and Greeks,
They were always for putting in harbours and creeks,
And instead of conveying him quick with his lading,
(As any men would who had due sense of trading,)
Could never come near a green isle with a spring,
But smack they went to it like birds on the wing.

After going to Rhodes and some other islands, Mr. Emerson made a further passage, in a small brig-of-war, of eighteen guns, which had formerly been employed by the Greek merchants to carry wheat to Spain and France, but had afterwards exchanged her grain for guns. Her cabin was high and roomy, built of unpainted fir, hung with arms and amber pipes, and surrounded by a divan, on which the captain and his second officer were wont to take their coffee and smoke their chibouques. The ship's company were a set of good-humoured but idle fellows; whose time was chiefly spent in sleeping, singing, or playing cards; and they would lie for hours together under the shadow of a sail, laughing and shouting over their favourite game of casino. Navigation appeared to be very little understood by the captain or his officer, for the cruises of the vessel were such as seldom kept it far distant from land.

By confining our attention, however, exclusively to the smaller maritime enterprises of the inhabitants of these islands, we scarcely do justice to the Greek seamen. Their general merits as mariners will be better understood from the following extract from a writer on this subject:—

The Greeks are universally addicted to commerce, and their marine is in many respects highly important. The islanders form the most enterprising portion of the nation, and carry on a petty trade in numberless half-decked boats, with high stems and sterns, and one thick short mast, with a long yard. They perform these voyages even as far as Constantinople and Smyrna, without chart or compass, and merely, as of old, by the observation of coasts and headlands. But they are acquainted with the management of the largest vessels of European construction, and besides navigating the Ottoman navy as seamen, they have large merchant-ships of their own, which trade as far as America and the West Indies, and make an occasional voyage to England. The natives of Hydra particularly, the most expert of the Greek mariners, have accumulated great wealth by their commerce, and have purchased from the Turks the independent election of their own magistrates. The number of Greek mariners actually employed at sea, is supposed to be not less than fifty thousand, and they are considered as capable of being trained to any kind of naval service.

With certain modifications resulting from the change in the relations between the Greeks and the Turks, the above account would be applicable in our own day.

If the stroke of War
Fell certain on the guilty head, none else—
If they that make the cause might taste the effect,
And drink themselves the bitter cup they mix;
Then might the Bard, the Child of Peace, delight
To twine fresh wreaths around the Conqueror's brow;
Or haply strike his high-toned harp, to swell
The trumpet's martial sound, and bid them on
When Justice arms for vengeance; but, alas!
That undistinguishing and deathful storm
Beats heaviest on the exposed and innocent;
And they that stir its fury, while it raves,
Safe and at distance, send their mandates forth
Unto the mortal ministers that wait
To do their bidding! CROWE.

OLD ENGLISH NAVIGATORS.

WILLOUGHBY, CHANCELOR, AND BURROUGHS.

II.

WHEN Richard Chancelor parted from his commander he seems to have gone on considerably to the north, for he speaks of having arrived at a place, where was perpetual daylight,—"a continual light and brightness of the sun, shining clearly upon the great and mighty sea." He must, however, have taken an easterly, and then a southern direction, before many days; for he succeeded without difficulty in reaching Wardhuys, where he waited for a considerable time for his companions; after which, disregarding the alarming reports of perils that would beset his farther progress, he pushed on gallantly towards his mysterious destination. The adventurers were guided to the entrance of an immense bay, which was no other than the White Sea, as yet unknown to Western Europe. They espied a little fishing-boat, the crew of which, having never seen a vessel of such a comparatively vast size as the Edward Bonadventure, took the alarm and fled at full speed. Chancelor, with his party, pursued and overtook them; whereupon they fell flat on the ground, half dead, crying for mercy. He kindly raised them; and by looks, gestures, and gifts, expressed the most kind intentions. Being then allowed to depart, they reported everywhere "the singular gentlenesse and courtisie of the strangers;" so that the natives came in crowds, and the sailors were well supplied with provisions and everything they wanted.

After inquiring on what part of the world they had been thrown, our navigators found that they were at the extremity of a vast country, but imperfectly known in Europe by the name of Russia or Muscovy, and then under the absolute rule of a sovereign named Ivan Vasilovitch, who held his court at Moscow, which was 1500 miles distant, and could only be reached by sledges over the snow. Chancelor sought, and obtained, permission to visit the capital. He was favourably received by the czar, and his able agency laid the foundation of that commercial intercourse, which has since subsisted with little interruption between England and Russia.

We are told that the English navigators were astonished at the pomp and magnificence of the Russian court. The czar behaved at first in a reserved and stately manner towards the strangers; but at another interview conversed more familiarly with them. "The prince called them to his table, to receive each a cup from his hand to drinke, and took into his hand Master George Killingworthes beard, which reached over the table, and pleasantly delivered it to the metropolitan, who, seeming to bless it, said in Russ, 'This is God's gift;' as indeed at that time it was not only thick, broad, and yellow coulered, but in length five foot and two inches of assize."

In the following spring, Chancelor sailed from Archangel, and arrived safely in England, bringing with him a letter from the czar to Edward VI. This letter expressed a cordial desire to open an intercourse with England, and to grant to the Company of Merchants-Adventurers every privilege necessary to enable them to carry on traffic in his kingdom.

Thus the expedition had failed in its immediate object, besides the disastrous loss of Willoughby and his associates; but the prospect of establishing a trade with an extensive empire served as some compensation. A new charter was granted to the Society of Merchants-Adventurers, who assumed the title of "The Muscovy Company." Chancelor was sent out again, with credentials from Philip and Mary, and commissioned to treat with the czar of Muscovy, respecting the commercial privileges and immunities which his majesty might be pleased to grant to the newly-chartered company. The original object, however, of a passage to India by

the pole, eastward, was still kept in view. The adventurers were instructed not merely to seek for commercial gain, but also to increase their geographical knowledge, and "to use all wayes and meanes possible to learne howe men maye pass from Russia, either by land or by sea, to Cathaia*."

But, before this expedition could produce its effects, another vessel was fitted up in 1556, the Searchthrift, and placed under the command of Stephen Burroughs, who, on the first voyage, had acted as master of Chancelor's vessel. The sole and express destination of this vessel was, the eastern passage by the pole to India. There was as much enthusiasm and hope upon this as upon the first occasion. Cabot came down to Gravesend with a large party of ladies and gentlemen; and having first gone on board, and partaken of such cheer as the vessel afforded, invited Burroughs and his company to a splendid banquet at the sign of the Christopher. After dinner, a dance being proposed, the venerable pilot, as Burroughs tells us in his journal, "for very joy that he had to see the towardness of our intended discovery, entered into the dance himselfe, amongst the rest of the young and lusty company."

Burroughs set sail from Gravesend on the 29th of April; but did not arrive at the islands and straits of Waygatz, between Nova Zembla and the continent, before the middle of July. The crew were very much alarmed by the monstrous pieces of ice, which they saw floating about, and often became so entangled with them, that they could with difficulty avoid one mass without striking upon another. At one time a huge whale came so close to the ship, that they might have thrust a sword into him; but the commander, fearing lest the monster should overset the vessel, caused the men to shout with all their might, as Nearchus had done many ages before in the Arabian sea. The like effect was produced in both cases: this mighty animal, which is neither ferocious nor very courageous, plunged into the depths with an astounding noise.

Our navigators here fell in with a Russian sail. From their commander, Loshak, they learnt that the country about there belonged to the wild Samoiedes, who were described as cannibals, and worshippers of idols. Burroughs saw in one place more than three hundred of their idols, of the rudest workmanship ever beheld. They consisted of figures of men, women, and children, badly carved, with the eyes, mouths, and other parts stained with blood. These barbarians had no houses; but lived in tents made of deer-skins. Our navigators in all probability found the inhabitants of the polar islands and of the north of Asia, very similar to the occupants of these regions at the present day.

We have a curious story handed down to us of a scene witnessed by Johnson, one of the companions of Burroughs, among the Samoiedes at the mouth of the Pechora, a river at the north-east of European Russia. It is represented as a scene of magic incantation, performed by one of the great northern wizards, who live by deluding the borderers of the Arctic circle.

The magician first took a great sieve, something like a drum; then he began to sing, as people in England halloo, whoop, and shout after the hounds; to which the people present responded with—"*Igha, igha, igha!*" The conjuror at length fell into convulsions, and dropped down as if dead, though his breathing could still be heard. When Johnson asked the meaning of all this, he was told,—"Now doth our god tell him what we shall do!" After he had remained thus for a short time, the people began to cry "*Aghao, aghao!*"—upon which he arose, and again began to sing. Then he took a sword, and thrust it through his body, so that it entered at the breast, and came out at the back. We are told that Johnson saw it go into the shirt before, and issue out at the shirt behind; but it does not appear that its actual passage was very narrowly scrutinized, which is quite sufficient to shew that the spectators were imposed upon. The magician then sat down with a vessel of hot water before him, and a line or rope of deer-skin wound round his body; over all of which, as well as himself, a large cloth mantle was spread. The ends of the line being left outside of the mantle, were drawn tight by two men in opposite directions, till something was heard falling into the vessel. Johnson was horrified at being informed that this was the magician's head, shoulders and left arm, severed from the body by the violent pulling of the rope. When Johnson asked leave to lift the cloak, and view this sad spectacle, he was informed that no one could do so and live. After the multitude had sung and hallooed for some time, the mantle was lifted up, and the conjuror came forth perfectly entire; all the parts cut asunder being understood to have been miraculously replaced. How far soever this gross and obvious imposture succeeded in deluding Johnson, it seems to have had an unlimited effect with the credulous and ignorant natives.

Our sailors had passed fifteen leagues beyond the mouth of the Pechora, and were nearing Nova Zembla, when the advanced season of the year prevented them from penetrating any further. Among other causes are mentioned the hindrance from the north and north-easterly winds, which seemed to the commander more powerful than in any other place; the immense quantity of ice, which seemed likely to be still further accumulated; the nights waxing dark, and winter with all its storms beginning to draw on. On these grounds it was decided to return, and winter at Colmogro; in order to resume their eastward navigation with the ensuing spring: but, in consequence of other employment, this design was not carried into effect, and the vessel returned to England in the succeeding year.

In the mean while Chancelor had proceeded on his mission to Archangel and to Moscow, where affairs had been well and prosperously carried on. The czar, Ivan Vasilovitch, sent back with Chancelor, Osep Nepea Gregorowitch, the regal ambassador and orator, as he was termed, with four ships heavily laden with furs, wax, train-oil, and other Russian commodities, to the value of upwards of 20,000*l.*, which belonged partly to the merchants, and partly to the orator. But the homeward voyage was most calamitous: two of the vessels were wrecked on the coast of Norway; a third reached the Thames; but the Edward Bonadventure, in which were the principal persons of the expedition, was driven by the storm into the bay of Pitsligo, on the north-east of Scotland, where it went entirely to pieces. Chancelor endeavoured, in a very dark night, to convey himself and the ambassador ashore in a boat. This boat was overwhelmed by the tempest, and Chancelor was drowned, together with most of his crew: the ambassador, however, by great good fortune succeeded in reaching the land. He was conducted to London with great pomp, where he was honourably treated by the English government; and the commercial relations of England and Russia were established on a closer and more solid basis.

These polar voyages were now suspended for a while, in consequence of the attention of the Muscovy Company being directed to the establishment of a new mercantile communication with the interior of Asia.

CREDULITY has been defined to be—Belief without reason. Scepticism is its opposite—Reason without belief.

HE who is governed by preconceived opinions, may be compared to a spectator who views the surrounding objects through coloured glasses, each assuming a tinge similar to that of the glass employed.—DR. PARIS.

* Cathaia, or Cathay, is the name formerly given to China, and the east of Asia in general

ON THE MEANS OF DIMINISHING FRICTION.

A LARGE portion of the force necessary to every kind of motion is consumed by various obstructions which the moving body has to encounter. The resistance of the air is one of the causes of retardation; a degree of cohesive attraction between the touching substances is another; but the chief impediment arises from the rubbing of the surfaces which come incessantly into contact. This obstructing power inherent to all bodies constitutes friction, which produces so many diversfied effects and exerts so extensive an influence in diminishing the performance of all machinery. If we could procure a horizontal plane surface, perfectly free from the smallest inequalities, and then place upon it a flat surface also perfectly smooth, any amount of force applied to such body would set it in motion, and the motion would continue undiminished, except by atmospheric resistance. But when we find that a perfectly smooth surface does not exist in nature, and cannot be formed by art: that every surface, however smooth it may appear to the eye, is full of furrows, prominences, and roughnesses, we need not be surprised at the large amount of force necessary to be maintained for the production of motion of the simplest kind.

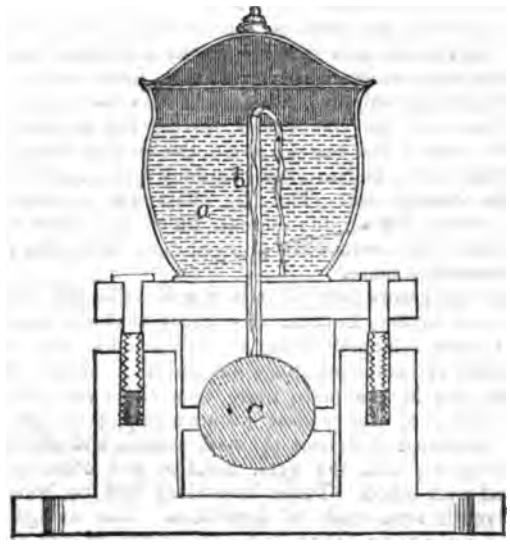
In the construction of machines, many ingenious and often complicated methods are devised for diminishing friction. When we find a principle everywhere and at every instant at work, tending to destroy the forces we are producing in the arts and ordinary concerns of life, we constantly complain of it as an evil, and do all we can to remove it; we would even destroy it if we could, and think that machine the most perfect which exhibits the least amount of friction. Yet, were it not for friction, the world would scarcely be habitable. Were there no friction—

It would be impossible for a man to move from any position in which he might be placed, without the aid of some fixed obstacle by means of which he might pull or push himself forward. And were there no horizontal power of resistance in the ground on which he treads, to destroy the forward motion which he gives himself at every step, he would retain that motion until some obstacle interposed to destroy it; so that the principal part of his time would be spent in oscillating about between the obstacles, natural or artificial, which the earth's surface presented to his motion; an oscillation which would be common to all the objects, animate or inanimate, about him. The slightest wind would sweep him before it; the slightest inclination of his body would bring him to the ground; everything he put out of his hand would start away from him, with the lateral force which he could not fail to communicate to it, in releasing his hold. If he attempted to sit down, his chair would slip from under him; and when he sought to lie down, his couch would glide away from him. He would in all probability be driven to forsake the land, and dwell upon the waters as the more stable element*.

There are two general methods of investigating the nature and operation of friction. The first method is, to ascertain the weight required to draw a body under the pressure of a given load along the horizontal surface of another. The second is still simpler, and consists merely in raising the end of the upper plane, till it acquires the declination at which the load begins to slide. The extreme declination of the plane is hence called the angle of repose.

The angle of repose often determines the outline of natural objects. Thus, fine sand slides more easily than mould, and hence sand-hills have generally a softer ascent than the grassy flanks of mountains. The latter, without being broken into precipices, may rise at an angle of forty degrees; but the former will seldom support an acclivity above twenty-five degrees. The angle of repose of iron pressing upon iron being sixteen degrees, if the threads or spirals of a vice wind closer than this inclination, the screw must hold at any place to which it is carried.

The means employed to diminish friction are of two kinds; viz., either by the interposition of unctuous or oily substances between the moving surfaces, or by certain mechanical arrangements. In delicate work, such as clocks and watches, where metal works against metal, the best substance perhaps is olive oil. But in some machines where the strain is very great, solid unguents appear to be preferable to oil, and in such case tallow or hog's lard is usually employed. The "Anti-Attrition Composition," which has been so much advertised for sale, is simply a mixture of four parts of hog's lard and one part of plumbago. In launching a ship the "ways" or sliders are smeared with soft soap. The slope of these sliders is in general not more than from 4 to 5¼ degrees. The lowest friction is here exerted, all previous adhesion being destroyed by blows of the mallet, and shocks given in the act of withdrawing the wedges. The momentary friction being 4, leaves an accelerating force of 3, which hurries the vessel forwards, notwithstanding its immense pressure of perhaps 35 tons on every square foot of the slide. If any impediment in the track should stop the progress of the ship, it soon regains such adhesive power as to render its removal very difficult. A tremulous agitation is the only expedient to urge the ponderous mass forward*.



When oil is applied to lubricate large works, it is apt to drain off, unless means are taken to confine it. The best contrivance for preventing the waste of oil and for keeping gudgeons and axes properly supplied with it, is Barton's Patent Lubricator, the ingenious construction of which will be understood from the accompanying section and description. *a* is a section of a metallic vessel filled with oil and closed by a cover fitting tightly to keep out dust; *b* is a small tube rising nearly to the top of the vessel, with the lower part extending an inch or two below it, and inserted into an aperture made through the block directly over the shaft *c:* through this tube a few threads of woollen yarn are drawn, which reach to the bottom of the vessel, and conduct the oil by capillary attraction, as a syphon, in minute but regular quantities to the shaft or gudgeon *c:* the whole of the oil in the vessel is thus carried over, entirely free from dust or other impurities, and in the precise quantity required, which is easily regulated by the number of threads. The economy of this contrivance is equal to its ingenuity: the machinery to which it is applied will

* MOSELEY'S *Mechanics applied to the Arts*, 2nd Edition.

* Hence the reason of the sudden falling down of weak or decayed structures. They are upheld long beyond the term of equilibrium, by the rooted adhesion of their parts; but any accidental shock dissolves this union, and the whole pile is precipitated to the ground.—LESLIE.

run with less friction, last longer, and require less power. The Patent Lubricator has been applied to the wheels of gentlemen's carriages with considerable success: a half a pint of oil will keep the axle well lubricated for a considerable time, and the wheels never require to be taken off for the purpose of greasing.

The mechanical contrivances for the diminution of friction consist either in avoiding the contact of such bodies as produce much friction, or by substituting as much as possible the motion of rolling for that of sliding. Thus, if a heavy load be drawn upon a sledge, the motion is that of sliding which is accompanied by the greatest amount of friction; but if the load be placed upon rollers, the nature of the motion is changed and becomes that in which there is the least amount of friction. Large masses of stone or timber would require an enormous force to move them on a level road, but the motion is easily effected when rollers are put under them.

The wheels of carriages may be regarded as rollers which are being continually carried forward with the load. In addition to the friction on the road, wheels have the friction of the axle in the nave; but they do not have to encounter the friction of rollers with the under surface of the load, nor that of the carriage which bears the load. The advantages of wheel carriages in diminishing friction do not arise, as is sometimes supposed, from the slowness with which the axle moves within the box compared with the rate at which the wheel moves over the road: the amount of friction does not in any case vary considerably with the velocity of the motion. In wheel carriages the roughness of the road is more easily overcome by large wheels than by small ones. The former are not so liable to sink into holes as the latter, and in surmounting an obstacle, the load has to be elevated less abruptly. The smaller the rubbing axis of a wheel, the less the friction. Castors on household furniture act as wheels.

Friction is also diminished when the rubbing surfaces are made of different materials. Axles made of steel may with advantage be made to bear on brass; in small machines, such as time-keepers, the steel axle sometimes plays in agate or diamond cups.

Friction wheels or rollers are sometimes employed to remove the effects of friction. The axle of a wheel, instead of revolving within a hollow cylinder which is fixed, rests upon the edges of wheels which revolve with it. This is a species of motion in which the friction is of least amount. In Atwood's machine described in Vol. XIII., p. 181, of this work, friction wheels are admirably employed.

SWEET is the voice of well-earned praise
To every virtuous ear;
The inspiring meed of youthful days,
And e'en to manhood dear.

As opening flowers to sunny skies
Their blooming fragrance bring:
Warm'd by the approval of the wise,
Th' unfolding virtues spring.

Yet oft, with undiscerning mind,
The applause of man is given:
But, O my soul! what joy to find
Thy deeds approved in Heaven.

THE thief who picks our pocket does not so much harm in society, nor occasion so much pain, as they may be charged with, who shock the ear of piety with profaneness, or tear open the wounds of the bleeding heart by forcing upon it some painful recollection.—BEATTIE.

No species of reputation is so cheaply acquired as that derived from death-bed fortitude. When it is fruitless to contend and impossible to fly, little applause is due to that resignation which patiently awaits its doom.—Roscoe's *Lorenzo de Medici*.

PALIMPSESTS.

THE term "*Palimpsest*" has been applied to manuscripts, from which the original writing has been erased, or washed out, and which have been then written on again. The word is aptly chosen, as it implies, according to its derivation from the Greek, the fact of the material for writing on having been *cleansed again*.

The material which, from its tenacity and consistency, was best capable of being submitted to this process, was *parchment:* the reader will find a very interesting article, descriptive of the preparation of this substance, at Vol. XIII., p. 188, of this work.

It seems that the practice of re-cleansing parchment, or removing the first writing, was not confined to the middle or dark ages,—to the inhabitants of the cloisters, but was in vogue even before the Christian era: it was probably resorted to from the time of the first production of parchment itself; for we are told that this material was always a scarce commodity until rather recent times. A preparation for effacing the original writing on parchment was known in the time of Augustus Cæsar; and Cicero, when writing to one of his friends, commends him for having been so economical as to write on a palimpsest, but says that he should like to know what those writings could possibly have been which were considered of less importance than a letter.

The ancients were in the habit of using likewise leaves or strips of the papyrus plant for the purposes of writing. This plant is common in Abyssinia, Egypt, and Syria, and is also met with in Calabria and Sicily; it inhabits both stagnant waters and running streams. The English word "paper," is derived from the name of this plant. The ancients had also a method of cleansing the papyrus-leaves of the original writing, though this substance was naturally very delicate and friable.

That parchment was a very costly material in the middle ages may be known from the fact that when Guy, count of Nevers, sent a valuable present of plate to the Chartreux of Paris, the unostentatious monks returned it with a request that he would send them parchment instead.

The scarcity and expense of parchment, therefore, and the demand for the writings of the Fathers and books of devotion in those times, frequently induced the monks to erase or wash out the writings of the classical authors, to make room for those of the Fathers. The original writing upon the parchment could be scratched out, and a peculiar kind of knife belonged to the apparatus of a transcriber: the parchment scratched in this manner was rubbed over with pumice-stone, to render it more fit for writing. The practice of thus removing old writings for the sake of the parchment was so common in the fourteenth and fifteenth centuries, that when the emperor of Germany empowered the creation of an imperial notary, one of the chief articles of the diploma of this officer was, that he should not use scraped vellum in drawing deeds. The manufacture of parchment has certainly been carried on in all ages; but that of the ancients was distinguished for its beauty, strength, and whiteness; for which reason, in later ages, a palimpsest of the ancient parchment was preferred to all the preparations of the new.

But, in many cases, the monks were not able to obliterate entirely the ancient writings; and a careful examination of these palimpsest manuscripts has led to the discovery of some valuable works and fragments of the classical authors. Among the most important is the treatise of Cicero "on the Republic," which was found in the Vatican Library at Rome by Angelo Mai, in a manuscript which had been re-written with the Commentary of St. Augustin on the Psalms. The *Institutions* of Gaius, which contained the Roman code of laws at the commencement of the Christian era, were also recovered

in a similar manner in the library of the chapter of Verona.

This latter manuscript consists of 127 sheets of parchment, the original writing on which was the four books of the *Institutions*, by Gaius, a Roman, who lived about the year A.D. 150. This original writing had, on some pages, been washed out, so far as was practicable, and on others scratched out; and the whole, with the exception of two sheets, had been re-written with the Epistles of St. Jerome. The lines of the original and of the substituted writing run in the same direction, and often cover one another;—a circumstance which considerably increased the difficulty of deciphering the text of Gaius. In addition to this, sixty-three pages had been written on *three* times: the first writing was the text of Gaius, which had been erased; and the second, which was a theological work, had shared the same fate, to make room for the Epistles of St. Jerome. This work of Gaius was found and restored in the year 1816.

The re-production of the traces of the original writing on the parchments has not, however, always been found so difficult a matter as in the case of the *Institutions* of Gaius. As the transcribers in the middle ages, when the want of writing-materials was felt, in consequence of the great demand for missals, &c., often divided the large sheets of written parchment, the second set of lines is sometimes found diagonal to the first; so that the old and new cross each other, or the old lines have remained above the others.

We thus see that some valuable writings of the ancients have already been recovered from beneath monkish effusions or superstitious legends, by carefully following the traces of the pen or style, which had impressed the former performance upon the membrane; and which traces still continued to exist in spite of the impressions made by the second scribe. The original characters thus often remain legible, so as to be visible to the naked eye; or they may be made to appear with the assistance of chemical agents. Persons whose business it was in the middle ages to prepare parchments by erasing manuscripts, were called "parchment-restorers."

This subject has greatly attracted the attention of *philologists*, or lovers of literature, for some years past. The increasing zeal in the search for remains of classic learning has directed the attention of the most erudite scholars to these hidden treasures; and we may hope that the great collections of manuscripts at Rome, Naples, Oxford, Cambridge, &c., which have been as yet but little examined, will afford us many more remnants of the literature of olden time.

THE MECHANICAL PROCESSES OF SCULPTURE.

It is difficult to name a branch of art, the successful application of which requires a more varied combination of powers than that of sculpture. The artist places before him a lifeless, shapeless block of marble, and from this he elaborates a figure which represents all the personal beauties of the human form, and in some instances almost seems to represent *mind*, as manifested by the expression of the features. Not only must the sculptor be familiarly acquainted with the anatomy of the human form, and those nice gradations of expression which indicate the varied workings of the mind within, but he must also possess consummate mechanical tact, in cutting the block neither more nor less than is necessary for the production of the desired effect. There is one very marked distinction between the labours of the painter and those of the sculptor: if the former employ a wrong colour, or use it injudiciously, he can repair his error, either by removing the paint, or by working upon it; but if the sculptor were to chisel away too much of his marble at any one point, no subsequent repair would adequately restore the deficiency. Having in another place treated of sculpture as a fine art, we now propose to give a brief description of the mechanical process of sculpture.

It must not be supposed that the sculptor produces a statue or bust without any copy to guide him. He *models* a figure in the first instance of some plastic and yielding substance, and when this model is completed he imitates it by cutting the block of marble to a similar form. The model is built up or formed piece-meal, not hewn or cut out of a solid lump, and the modeller is thus enabled to attain the desired form with more ease, because he can add or remove small portions of the substance at pleasure. It appears pretty certain that the ancients almost always formed their first models in wax, although in modern times clay is generally used for this purpose. This preference of the ancients for the use of wax did not result from their non-acquaintance with the use of clay, but from certain advantages which wax possesses over clay. Indeed, as has been observed by a recent writer, if clay could be made to retain its original moisture, it would undoubtedly be the fittest substance for the models of the sculptor, but when it is placed either in the fire, or left to dry imperceptibly in the air, its solid parts grow more compact, and the figure, losing thus a part of its dimensions, is necessarily reduced to a smaller volume. This diminution would be of no consequence if it affected the whole figure equally, so as to preserve the proportions unaltered, but in effect the smaller parts of the figure dry sooner than the larger, and thus losing more of their dimensions than the latter in a given space of time, the symmetry and proportion of the figure somewhat suffer. On the other hand, wax cannot be worked up so smoothly to represent the fleshy parts as clay, and hence the plan usually followed is a combination of both, by making a model of clay, then making a mould of plaster from this model, and lastly casting a second model, from this mould, in wax.

When the artist has prepared a drawing conveying a general idea of the figure to be modelled, he proceeds to build up his statue or group, for which purpose a general nucleus or skeleton is first formed of wood or iron: to this small crosses are generally attached, in order to form fixed points of support for the clay. The clay, carefully prepared for that purpose, is then laid on the skeleton, either by the hand, or by some convenient implement, and by means of small wood or ivory tools, with their ends pointed, round, square, or diagonal, he gives the clay the required form. Whether the figures are or are not to be covered with drapery, he models them naked, in order to insure correctness of anatomical detail, and afterwards, if requisite, forms the drapery by extra layers of clay.

When the model is completed, it is not often that the sculptor proceeds to chisel his marble from the clay model as a pattern, but he forms a plaster mould, from which to obtain a plaster or wax figure. Supposing, for simplicity of description, that the work is a bust, he encases the clay model of the bust with a thin stratum of cream-like plaster; but as this case has afterwards to be removed from the model, he adopts the following plan. A thin edge or ledge of clay is laid along the bust from the head to the base, on both sides, so as to form a separation between the front and back portions of the bust, and the front is first completed up to this ridge of clay, the moulder carefully casting the thin plaster into the recesses of the eyes, ears, nostrils, &c. A thicker plaster is then thrown on, till a thickness of two or more inches is obtained. The ridge of clay is now removed, the edges of the plaster are slightly touched with oil, and the back is covered in the same way, till the whole becomes a shapeless lump of plaster. This lump is, when dry, separated by a few blows with the mallet and chisel, so as to come off the model in two pieces, which together form a mould or counterpart of

the model. These two pieces, after being cleaned, are slightly moistened with oil, and united again with cords wrapped round them. A plaster cast from this mould is then obtained, by pouring liquid plaster into it, and by breaking or separating the two halves of the mould when the plaster has set: if the cast be of wax instead of plaster, the mode of casting is nearly the same.

When the clay, plaster, or wax model is completed, the sculptor proceeds to imitate it in marble. There are various contrivances for guiding him in this operation,—of which one is as follows. A number of small black points are marked upon the model in every principal projection and depression, to give the distances, heights, and breadths sufficient to copy the model with exactness. The ancients effected this by considering every three points on the figure as forming a triangle, which they made in the marble to correspond with the same three points in the model, by trying it with a perpendicular line, or some other definite line, both in the marble and in the model.

Another contrivance, suggested by the Academy of Painting at Rome, is the following. The statue or model which is to be copied is inclosed in a frame that fits it exactly; the upper part of which is divided into a certain number of equal parts; and to each of these parts a thread is fixed, with a piece of lead at the end of it. These threads, hanging freely downwards, shew what parts of the stone are most removed from the centre, with much more perspicuity and precision than the dots before spoken of; and they also afford the sculptor a tolerable rule by which he may measure the more striking variations of height and depth. But a serious difficulty nevertheless attends the use of this method; for as it is impossible by means of a straight line to determine with precision the direction and nature of a curve, the sculptor has no certain rule to guide him in his contours; and whenever the line which he is to describe deviates from the direction of a plumb-line or vertical, he must necessarily feel at a loss, and proceed somewhat on conjecture. Another inconvenience attending this method is, that there is no certain rule to determine exactly the proportion which the various parts of the figure ought to bear to each other. Even if horizontal lines be drawn intersecting the plumb-lines, the difficulty is not wholly removed; for the squares formed by transverse lines that are at a distance from the figure, although they be exactly equal, yet represent the parts of the figure greater or smaller, according as they are more or less removed from our position or point of view. Still however, notwithstanding these defects, this method is deemed by some persons the best that has been devised.

A third method, and the one most generally adopted in modern practice, is the following. When the block of marble is ascertained to be of sufficient size, it is fixed on a basement of stone, or a strong wooden bench called a *banker*, in front of which is a long strip of marble, divided into feet and inches. Another strip of marble divided in the same manner, is placed below in front of the model; and a wooden perpendicular rule, the height of the work, is placed so as to be moveable from the strip of marble or scale under the model to that which is under the block to be cut. This wooden rule is first placed on the scale of the model; and the exact distance from it to any prominent part, such as the nose or chin, for example, having been taken, the rule is removed to a corresponding position on the other scale, and the workman cuts away the marble to the same distance from the perpendicular at the same height, that is, till he has arrived at that point of the block which is to form the prominent part in question. The sculptor then proceeds in the same way with other prominent parts; and afterwards to the depressions which intervene between them; until he has at length obtained a rough figure, containing within it all the other minute details which remain to be brought out by the skilful hand of the master.

A variation of the above method is practised by some sculptors. The model and block of marble being ranged side by side on the bench or platform, a brass frame is placed in front, on which slides a brass perpendicular joint. This joint carries a tube through which a rod passes, and which is brought in front of the model, to some particular part of which the point of the rod is applied; the point being set, it is retained at that distance in the tube by a screw. The instrument is now placed in a corresponding position in front of the block, on which the position of the point is marked by the end of the rod. A hole is now drilled in the block in this place, to such a depth as to allow the sliding rod to penetrate it to the proper distance. Another point is now taken, and the block drilled in a similar manner; till at length it is pierced in every direction. These parts are then cut away with the chisel, care being taken never to remove any part below where the drill has been. Mr. Behnes, the sculptor, has invented a very ingenious machine for producing the required effect somewhat in this manner.

When the assistant workmen have, in some one of the ways described above, brought the block of marble to a rough stage of approximation to the desired form, the master-hand proceeds with his delicate and difficult work. He chisels the figure with a flat-ended steel tool about half an inch broad. In the plain parts he cuts a channel in the surface from one given point to another; then cuts other channels parallel with it, leaving intervening ridges about an eighth of an inch broad; then cuts other channels in a direction at right angles with the former; and lastly cuts away the remaining rough surface. It is found that by no other means can he produce a level and regular surface; but this being once produced, he can easily vary it with the requisite undulations. Generally speaking, the chisel and hammer are the tools employed; but when the hollows are so deep and intricate as not to be easily reached by this means, drills of different kinds are employed, followed by other tools furnished with long handles, and worked by the hand only, without the use of a hammer. It need scarcely be observed, that to produce a successful imitation of the fulness of muscle, the pliability of the softer parts, the strength of tendons, and the firmness of bone, requires that the sculptor should be well acquainted with the anatomical characteristics of the several parts. The light, soft, and curly appearance of the hair requires considerable manual dexterity to imitate.

When the chiselling is completed, the surface of the marble requires another process to bring it to a smooth state. This is effected by the use of rasps and files, made for this purpose in Italy; coarser rasps being used first, and then very fine files. If any part of the piece of sculpture is required to have an unusually smooth surface, it is rubbed over with pumice stone after the file has been used; and sometimes the whole surface is rubbed or ground carefully over with small pieces of grit-stone, accommodated to the various forms of the surface, as to flat spaces, rounds, hollows, &c. The hair does *not* admit of being finished in this way, as the delicacy and lightness of its appearance requires that the finishing touches should be given by a very fine and keen-edged tool.

If the bust or figure on which the sculptor is at work be not very large, he places it on a large, square, four-footed stool, provided with a movable top which turns round on brass or iron balls.

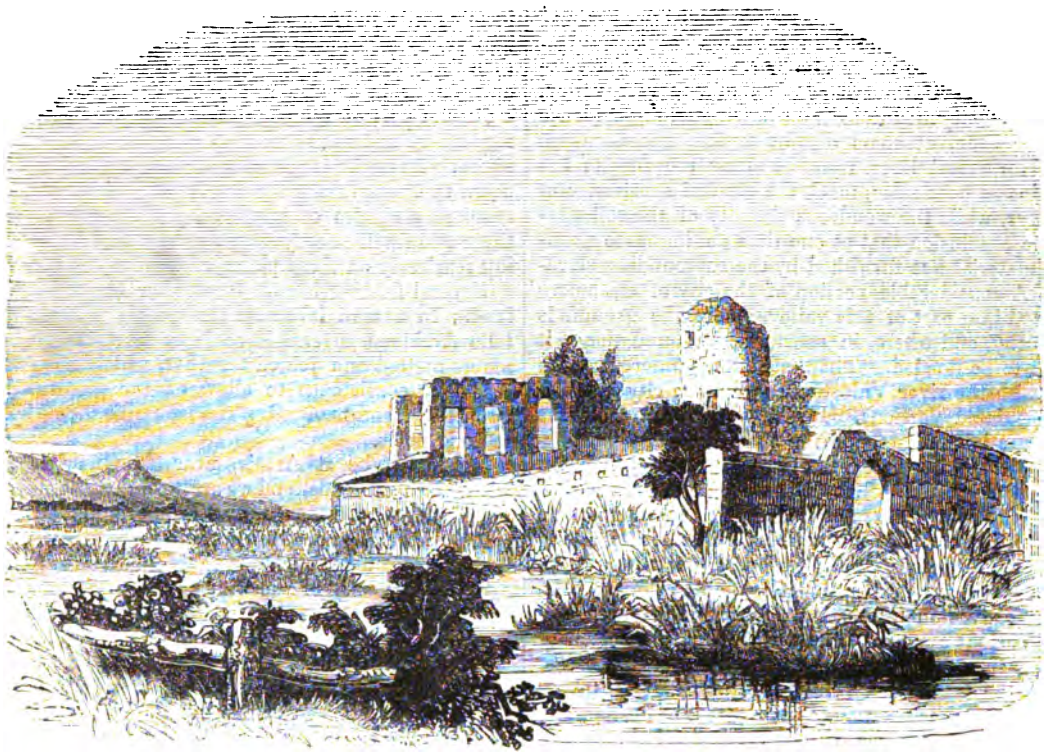
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 608. DECEMBER 25TH, 1841. Price One Penny.

FLOATING ISLANDS.



THE LAKE OF THE FLOATING ISLANDS.

It was a fancy of the ancient Greeks, that Delos, one of the Cyclades, in the Archipelago, was originally an island floating on the waves, and exposed to all the casualties of storm and tempest, but that Neptune, out of pity for its forlorn condition, made it stationary, and in order to fix it securely, begirt it with the two islands, Mycone and Gyaros. Absurd as this idea may appear to us, there are many instances of floating islands really existing at the present day, and it is only the size and *situation* of Delos, with the superstition respecting Neptune, that make the story of the Greeks incredible.

In various parts of the world these islands are formed, either naturally or artificially, on lakes and rivers; but perhaps the most celebrated among them are the *Chinampas*, or floating gardens of Mexico. It is said that they owe their origin to the extraordinary situation in which the Aztecs were placed on the conquest of their country by a neighbouring nation. They were driven to take refuge in small islands on the lake, and were obliged to exercise the utmost ingenuity in order to provide a sufficiency of food for their sustenance. Humboldt thinks that the idea of these gardens was suggested by Nature herself, since on the marshy banks of the lakes of Xochimilco and Chalco, the agitated waters, in the time of the great floods, carry away pieces of earth, covered with herbs, and bound together with roots. Whatever may have first prompted the idea, we find that the early Chinampas were generally composed of fragments of earth, artificially joined together and cultivated, and that their use was for some time confined to the growth of maize and other necessaries of life. When the Mexicans had delivered themselves from their unhappy condition, the floating gardens of their lakes were no longer appropriated to the exclusive cultivation of necessaries, but became the means of adding to the luxuries of the people, and teemed with delicious fruits and fragant flowers. These gardens are now extremely common in Mexico, and are of two kinds those which are always floating about on the water, and are wafted hither and thither by the capricious winds; and those which are attached to the shore by chains, for the convenience of the proprietor, who perhaps has his dwelling on the adjacent bank. But even in this latter case, if the owner of the Chinampa becomes dissatisfied with his situation, or has some disagreeable neighbour whom he wishes to avoid, he has nothing to do but to unloose the chains which bind his island to the spot, and with his hut and his plantation, float wherever he pleases.

The principal supply of flowers and roots required in the city of Mexico is obtained from these gardens, nor is the cultivation of the useful vegetables neglected. Some of these fertile spots are devoted to the rearing of beans, artichokes, and cauliflowers, round which a hedge of rose-bushes gives solidity to the soil, and in the time of their blossoming, a lovely and fragrant ornament to the whole. In the driest seasons these Chinampas are always productive, and when it is necessary to renew the powers of the soil it is easily done by means of mud taken from the bottom of the lake, which is of a highly fertilizing quality. The gardens are sometimes of considerable extent, but more frequently they are small, and contain no other dwelling than a little hut to shelter the cultivator from heat or storms, or a cottage

for the habitation of an Indian, who has the charge of a contiguous group of gardens. It is said to be a very pleasing sight to watch the arrival of the innumerable rafts, descending at sunrise towards the city by the canals of Chalco and Istacalco, and bearing the rich productions of these floating islands. It is likewise a favourite recreation of the citizens of Mexico to proceed towards evening in small boats, and row in among these luxuriant gardens, where the vegetation is always fresh and brilliant, and where they find an agreeable solace after the fatigues of the day.

Floating gardens of a more fragile kind than those of Mexico are very numerous in the lakes of Cashmere. It may be known to many of our readers that the celebrated land of Cashmere consists of one vast valley, encircled by lofty mountains, and bearing strong evidence of having been, at some distant period, one immense lake. Horizontal lines, running along the face of the mountains on both sides, mark the gradual subsidence of the waters, while the wondrous fertility of the soil warrants the conclusion that at one time an immense quantity of material was furnished by the surrounding elevations. A considerable portion of the city of Cashmere is situated in a part of this valley, where the ground is still marshy, and where, in considerable inundations, it is liable to be flooded. There are also numerous lakes which, with the river Vidusta, separate the city into different insulated portions. Hence many inconveniences arise to the inhabitants, and the cultivation of their gardens is checked by the expectation of a flood, which will render their labour useless, by sweeping away the products of the soil. These circumstances have led to the practice of forming floating gardens, or rather, of taking advantage of those partially formed by nature. In an account of the natural productions of Cashmere Mr. Moorcroft gives an interesting description of these gardens. Various aquatic plants spring from the bottom of the lakes, such as water-lilies, confervæ, sedges, reeds, &c., and the boats which traverse these waters, taking in general the shortest way to their places of destination, cut, as it were, a track through the weeds in various directions. In these patches of sedge and rushes the farmer establishes his melon and cucumber floats, by cutting off the roots of the aquatic plants about two feet under water, so that they lose all connexion with the bottom of the lake, but still continue attached to each other. He then presses them together in closer contact and forms them into beds of about two yards in breadth, and of an indefinite length. The heads of the sedge, reeds, and other plants are then cut off, and left on the surface of the float, which is next overlaid with a thin coat of mud, which gradually insinuates itself into the mass of matted stems. The float is prevented from being wafted about by the wind by stakes of willow, which are driven through it at each end, and which do not prevent its rising and falling with the rise and fall of the water. When the gardens are thus prepared for the reception of the vegetable to be raised on it, the gardener has in readiness a number of cucumber and melon plants, which he had previously raised under mats. Such of these as have four leaves, he places upon the floating mass at about two feet distance from each other. After the planting, no further labour is necessary, and the only remaining care is to collect the fruit. Some of these islands will bear a man's weight, but the fruit is generally gathered by a person sitting in a boat; and owing to the small breadth of the garden, all the operations connected with it may be conducted in the same way.

Thus it will be seen that the floating gardens of Cashmere are of an inferior description to those which have excited so much interest in Mexico, and are not capable of producing an equal variety of plants; yet they are sufficient for the wants of the people, and yield in abundance the fruits for which they are prepared. Mr. Moorcroft thus speaks of their luxuriance:—

I traversed a tract of about fifty acres of these floating gardens in cucumbers and melons, and saw not above half a dozen unhealthy plants, nor have I seen in the cucumber and melon grounds, in the vicinity of very populous cities in Europe, or in Asia, so large an expanse of plants in a state equally healthy, though it must be observed, running into somewhat too great luxuriance of growth.

In China, also, where an excessive population renders it imperative on the inhabitants to have recourse to every expedient for increasing their means of subsistence, rafts and floating islands are formed on the surface of their numerous lakes and rivers, the whole of which are teeming with life and vegetation. In the neighbourhood of the city of Canton alone it is calculated that more than forty thousand persons live on the river, in islands, on rafts, or in boats. These persons are considered as a distinct part of the population, being under a separate regulation, and not allowed to intermarry with those on shore. Even the large rafts of timber which are floated down to Canton from the north and west, become the temporary abodes of numbers. Huts are erected on them and families of young children may be seen sporting fearlessly on these plains of floating timber.

Several floating islands have been observed in Lapland. In a small lake near the Gothic fortress of Castello Archione, several have been naturally formed of plants matted and joined together, which have attained sufficient consistence to allow of the peasants getting upon them, and navigating the lake with them, by means of long poles.

A small lake at Artois, near St. Omer, is covered with floating islands, and we are told that the neighbouring farmers draw them near the shore, and drive their cattle on them, to feed upon their rich pasturage, afterwards unloosing the islands again, and allowing them to drift at the mercy of the winds. Some of these islands exist in the Lake Gerdan, in Prussia, and are of considerable importance, if the account be correct which informs us that a hundred head of cattle find pasturage on them. An island of this description which exists in the Lake of Kolk, in Osnabruck, is said to be covered with fine elms.

Small floating islands exist in the beautiful Loch Lomond, and in other waters of Scotland and Ireland, nor are the lakes of Cumberland without a specimen of this curiosity. A very remarkable one has emerged from the bottom of the Derwent, three times within the last thirty years. It was formed by the gradual deposition of decayed aquatic plants. In a small sheet of water connected with Esthwaite Lake, Hawkeshead, a floating island, thirty yards long, by five broad, has existed for many years. Some years back a heavy flood lifted it half on land, where it remained stationary, until some young men, taking advantage of a high state of the water, re-launched it, and sailed across the lake upon it. It has frequently been guided from the smaller to the larger lake, and *vice versâ*, and on one of its trips it bore fifteen persons across the waters. The shrubs of various sorts growing upon it supply the place of sails.

These islands, generally speaking, may be regarded rather as a matter of curiosity, than of economic importance. They occur in almost every part of the world where a marshy soil is prevalent. In the Nile, in the Congo, in the Lake of Tivoli, in the marshy lakes of Commachio, near the Gulf of Venice, in Guayaquil, in the kingdom of Quito, and many other places, we read of the frequency of floating islands, but we do not find them appropriated to useful purposes except in a few instances. It has been suggested that the water-surface of our own islands might be called upon to contribute to the support of our increasing population, but it is very much to be questioned whether the plan would be attended with beneficial results in such a climate as ours.

Our engraving presents a view of one of these lakes in the Campagna Romana, about fourteen miles from the city

of Rome, of volcanic origin. Its ancient name was *Aquæ Albulæ*, since called *Lago Tartari*, *Lago Solfatare*, or, *Lake of the Floating Islands*. The water is of a bright blue colour, highly charged with sulphur; it is much warmer than the atmosphere, extremely disagreeable to the taste, and possesses the property of petrifying all substances with which it comes in contact. Thus, the decomposed rushes and rank weeds with which the lake is bordered, falling therein, become hardened in very large masses, and float on the surface: hence the name, *Lake of the Floating Islands*. Its waters are reported to be fathomless, and no fish can live within its depths. On the side of the lake are the remains of the baths, erected by M. Agrippa, frequented by Augustus, and subsequently repaired by Zenobia, Queen of Palmyra. In consequence thereof, these ruins are now called *Bagni della Regina*, or Baths of the Queen.

It is an imperative duty to maintain at all times an important truth; for even should we despair of seeing it immediately recognised, we may so exercise the minds of others, as to lead them in time to a greater impartiality of judgment, and in the end to a perception of the true light.—Silvio Pellico.

Married life appears to me a sort of philosophical discipline, training persons to honourable duties, worthy of the good and wise. Few unmarried people are affected as they ought to be towards the public good, and perceive what are really the most important objects in life.—Melancthon.

To me there is something affecting in the *last look*, on whatever object it is cast, for the last of everything reminds us of the last of life, the last day we shall spend on earth—the last look we shall fix upon terrestrial scenes—when we must turn from the beloved objects, whose society and sympathy have sweetened our cup of woe, and filled our span of time, to the loneliness of death and the realities of eternity.—Sir Thomas Raffles.

True wisdom bids her disciples search into the mysteries of nature as far as nature's ways are penetrable by man; but, although they scorn to hoodwink reason, they perceive and acknowledge that there is no surer sign of rationality than the forbearing to torture reason with inquiries beyond its scope and ken. True wisdom teaches that, besides the things which are revealed, there yet remain secrets, which belong not to us or to our children: still the knowledge attained and attainable by them is great; and they love not less because they know not more. And how different must be the feelings of one, who sees in all the mechanism and adaptations of the universe but the effects of chance, the results of a blind impulse of mutation, from those with which the self-same wondrous works are beheld by him who traces throughout the whole creation the finger of the great Creator: the former misinterprets the book of nature, and reads therein a melancholy tale, by which he is taught, not in humility, but in despondence, to "say unto corruption, thou art my father, and unto the worm, thou art my sister and my mother;" while to the latter, the heaven and the earth, and all that they contain, become narrators of the wisdom and benevolence of Him who made them. Yes; for, although there is neither speech nor language, (by reason's ear) voices are heard among them; and the true philosopher, instead of bewildering himself in unsound metaphysical speculations, perceives, even in those things which are the least understood, sufficient evidence of design to forbid their production to be attributed to chance: he recognises at once proofs of skill in the design, that he cannot fathom; and of power in its execution, that he can neither measure nor comprehend. Yet, although incomprehensible, and hence, to some a stumbling-block, and to others foolishness, he beholds in these obscurities many sure manifestations of a wisdom without limit, and of a power without control. Yes, these clouds, which bound the horizon of human knowledge, are clouds of witnesses, for o'er their darkness he sees extended a bow of promise, a standard of the Deity; and therefore, joining in the common theme of praise, with mingled sensations of gratitude and love, he humbly yet confidently declares, "My Father *made them all*."—Gilbert T. Burnett.

ON CHESS. XXIV.

Chess without the Board.

The severe mental exercise necessary for conducting a game of chess, without the help of board or men, was practised at a very early period in the history of the game. So far back as 970 years after Christ, an individual named Joseph Tchelebi is said to have acquired a facility at playing chess, blindfold; nor was this at all an unusual case in the East. The chess-board and men were, however, *handled* by these persons, and the difficulty of conducting the game was thereby greatly lessened.

Far more difficult was the task, and far higher rose the fame of the celebrated personage who appeared in 1266, and astonished the people of Italy by his performances. The name of this man was Buzecca, a Saracen, who visited Florence at the period above mentioned, and gave play at the same time to three of the best artists in chess which Italy could produce. These games were played in the presence of numerous persons of distinction: two of the games were conducted by Buzecca without seeing the board, while the third was going on between himself and an antagonist in the ordinary manner. Great was the astonishment and admiration of those who witnessed this trial of skill to find the Saracen winning two games and drawing the third. The opponents of Buzecca being on this occasion chosen men, and of a country which had become renowned for skilful chess-players, there is the more reason to admire the talent by which he was able to defeat them, and to remark on the high state of cultivation which the science of chess must have arrived at in the East.

Several persons are mentioned as excellent blindfold players, at the close of the sixteenth and commencement of the seventeenth century, especially the celebrated Ruy Lopez, chess-professor at the Spanish court, who wrote an elaborate treatise on chess, but with unusual modesty omitted to mention his own attainments as a blindfold player. Mangiolini of Florence, Zerone, Medrano, Leonardo da Cutri surnamed Il Puttino, and Paolo Boi, are some of the distinguished names of this period in that branch of chess-playing now under consideration. The last-mentioned individual was in the habit of playing three games at once without seeing any one of the boards, and without intermitting his usual strain of lively conversation. He was contemporary with Ruy Lopez, who was decidedly his inferior, and with Leonardo of Cutri, who was by many persons deemed his equal. The life of Paolo is sketched by two historians, Carrera and Salvio, and contains many interesting particulars, which we have given in our notice of celebrated chess-players. Paolo was the conqueror of every chess-player of his day, except Leonardo da Cutri. The contest between Leonardo and Paolo was very severe. They played a match which lasted three whole days. During the first two days they were exactly equal, but on the third Paolo, who was suffering in health at the time, lost ground, and was finally defeated. The two heroes never encountered each other again. Respecting the style of play of these two men we read that Paolo was rapid in his moves, while Leonardo was extremely slow and cautious.

Girolano Saccheri, a priest of the order of Jesuits, is spoken of by Keysler, the historian of Turin, as a man of extraordinary chess attainments. He lived at the early part of the last century, and was of so precocious an intellect, that, before he was ten years old, he could solve the most difficult problems in algebra and arithmetic, and was afterwards constituted public lecturer on mathematics at Pavia. He could play three games, or according to some writers even four, at the same time, with perfect clearness and accuracy, without seeing any one of the boards.

The practice of playing chess blindfold, had, for so

many years fallen into disuse that when the astonishing performances of Philidor were made known, they were regarded as a feat of intellect altogether new and peculiar to that great player. In our biographical sketch of Philidor we have spoken of his achievements in this difficult department of the game, and pass on now to say a few words respecting the most celebrated blindfold players of our own day.

The faculty of playing chess without seeing the board is not the invariable, or even general accompaniment of excellence in that science. Many first-rate players have been unable to attain it, while some who have accepted odds of these, have found little difficulty in carrying out a game to its termination blindfold. Those who study chess chiefly from books, find less difficulty in playing without the board, than those who have acquired their knowledge chiefly from practice. There have been very eminent men who never looked in a chess-book until their own high standing was already taken—of such were La Bourdonnais, Deschapelles, St. Amant, Boncourt,—again there were others who were essentially book-players, and likewise excelled. Mr. Mac Donnel, one of the best players Great Britain has ever produced, studied much from books. In the blindfold games played by him, moves were made more quickly than when he saw the pieces.

He expressed some feeling of annoyance, (says Mr. Walker,) if the bystanders spoke in whispers, but had no objection to conversation being carried on around him in a natural tone of voice.

But since the time of Philidor no one has excelled so highly in the art of blindfold playing as the late M. de la Bourdonnais. With very little practice he was able to play one game at a time, within a pawn of his strength, as he proved by playing publicly with MM. Boncourt, Jouy, Bonfil, and others, He afterwards played two games at once against third-rate players, and was preparing to play three blind-fold games at once against the best players, when an alarming rush of blood to the head was the result of this severe, and we may add useless, mental exertion. A long illness was the consequence, and M. de la Bourdonnais was compelled to relinquish all further attempts at playing without seeing the board.

The difficulties attendant on acquring skill in chess can scarcely be exaggerated even when playing in the usual manner with unlimited time at command to expend in surveying the forces on the field before us. In how vast a degree must these difficulties be multiplied when the mechanical objects of the chess-men and chess-board are abstracted, and no longer exist save in the powers of the mind; when the windows of the brain are closed down, and the faculties of sight are hermetically sealed; when a bare idea alone remains and all abroad is darkest night; when all that is left of the chess-board and men is their vague and timid shadow, wandering, spectre-like, across the mental chamber, like objects on a camera obscura; when memory and the perceptive faculties of the brain must be taxed, unaided, to name the position of every piece, pawn, and square of the chequer! And when these efforts of the reasoning and thinking powers require to be uninterruptedly prolonged and sustained, during a period of possibly several consecutive hours, without the slightest relief, break, pause, rest, or relaxation; then, I say, the art of playing chess without seeing the board, becomes, fairly considered, an extraordinary effort of the mind; and one which must be allowed to be, in the eyes of the metaphysician, equally curious as interesting.

These remarks by Mr. George Walker apply, of course, to first-rate players who conduct the game blindfold within a pawn of their strength, and in this way play two or even three games at the same time. But to play one game badly without seeing the board is comparatively easy, and may be done by many a second or third rate player who is willing to bestow a little time on the exercise.

Mr. Walker gives some very sensible directions for the guidance of those chess players who are desirous of playing without seeing the board. Referring such as are interested in the subject to his article in *Fraser's Magazine*, Vol. XXI., p. 302, we pass on to notice the "Art of Playing without seeing the Board," by Carrera, whose remarks are not so well known nor so accessible as Mr. Walker's.

Those who are desirous of learning the art of playing without seeing the board, must have in their mind all the squares of the chess-board, and all the pieces that are or were on them. It is not sufficient, as some think, to know that such a square belongs to such a piece, or has such a number, because much more than this must be learned. In the first place, the player may take as a certain rule, that on the perpendicular lines all the odd numbers are of the same colour; for example, if the first square of a line be white, then the third, fifth and seventh squares will also be white; if the first be black, the third, fifth, and seventh will be black. It is different with the oblique lines, which are either all white or all black; for example, the oblique line which begins at the white king's rook's square is entirely white, and that beginning at the white queen's rook's square, entirely black; and as all the straight lines have neither more nor less than eight squares, it is not necessary to say anything more respecting them; but it is very different with the oblique lines; only two of these contain eight squares, namely, those which begin at the rook's squares, one of which is white, and the other black; those lines which begin at the knight's squares having only seven squares, one line is black, the other white; moreover from the knight's white square on the left hand is another line containing only two squares, and from the king's black square on the right hand, is also a line containing only two squares, but it would be tedious to mention all the squares of the oblique lines; suffice it to say, that all the squares whether black or white, on the right hand or on the left, should be remembered by the student. This is the more required, because it is not only necessary to know the squares from the beginning, but also from the middle and end of the lines: for example, the third square of the white queen is white, which branches into an oblique line of four squares forwards on the king's side, and backwards on the same line two squares on the queen's side; forwards to the left is another line of three squares, and backwards on the king's side two squares; it is also necessary to know which of these squares is the king's fourth, adversary's bishop's fourth, king's third, rook's second, &c.

With regard to the pieces and pawns, it is necessary to have well fixed in the mind their position when on their own squares, in order to know what squares they attack: for example, it is not sufficient to know the situation of the king's pawn at its own square; you must also know that it attacks the queen's third, and king's bishop's third square; the same with the pieces; the white king's knight on its own square attacks the king's second, bishop's and rook's third square: it is much more difficult, when the pieces have quitted their own squares to know what squares they attack, so that the essence of playing without seeing the board consists in the knowledge of the relative position of the squares, and of one's own and one's adversary's pieces, so that the player may not mistake, when he checks the adversary, it he can give him check mate, or if he can interpose any piece or pawn &c., &c.; all which requires, too, a perfect knowledge of the pieces exchanged and taken, for without it one cannot possibly play without seeing the board.

Of the pieces, the knight is considered the most difficult to remember, on account of the peculiarity of its move, and therefore I shall make a few remarks on it; from the square on which the knight is, counting two squares forward, backwards or sideways, the knight attacks the square adjoining the third square to the right and left; the smallest number of squares that the knight can attack is when it is on one of the rooks' squares, as it attacks only two squares; if it be on its own square it attacks three squares; four squares, if it be placed on the bishop's, king's, queen's, knight's second, or rook's third or fourth square; if it be placed on the king's third or fourth, queen's third or fourth, or bishop's third or fourth, it attacks eight squares; if it be placed on the remaining squares it attacks only six squares.

The pawns are more easy to keep in mind, because they never attack more than two squares, and the rook's pawns only one; after the pawns, the piece the easiest to remember is the king, then the rook, then the bishop (because it is easier to remember the perpendicular than the oblique line), then the queen. Besides to play well without seeing the board, it is necessary to play often, which is not a little fatiguing; no one can play so well from memory as if he

saw the board: this is allowed by all who profess to play without seeing the board. I grant that some succeed better than others, but none so well as if they saw the pieces. It is not necessary to be very skilful in order to play without seeing the board, for common players succeed in it; allowing the difference in play between seeing and not seeing the pieces.—Lewis's *Translation of Carrera.*

In the education of the intellectual powers, two chief ends are to be kept in view: first, the most advantageous developement of these powers themselves; and, second, the communication of the greatest amount of knowledge capable of being brought into useful application.—*British and Foreign Medical Review.*

It must always be the condition of a great part of mankind to reject and embrace tenets upon the authority of those whom they think wiser than themselves.—Dr. Samuel Johnson.

A man's own heart must ever be given to gain that of another.—Goldsmith.

To adopt popular opinions without the slightest hesitation, is to run the risk of introducing into science, to its great injury, a multitude of confused notions founded on phenomena imperfectly seen and inaccurately examined; but to reject such opinions without examination, is often to lose an opportunity of important discovery.—*Magazine of Popular Science.*

UNION BETWEEN SOUL AND BODY.

When we die, we do not cease to be, nor cease to live, but only cease to live in these earthly bodies; the vital union between the soul and body is dissolved, we are no longer encloistered in a tabernacle of flesh, we no longer feel the impressions of it, neither the pains nor pleasures of the body can affect us: it can charm, it can tempt no longer. This needs no proof, but very well deserves our most serious meditations.

For this teaches us the difference and distinction between soul and body, which men who are sunk into flesh and sense are apt to forget; nay, to lose the very notion and belief of it. All their delights are fleshly; they know no other pleasures but what their five senses furnish them with: they cannot raise their thoughts above this body, nor entertain any noble designs, and therefore they imagine that they are nothing but flesh and blood, a little organized and animated clay; and it is no great wonder that men who feel the workings and motions of no higher principle of life within them, but flesh and sense, should imagine that they are nothing but flesh themselves. Though methinks, when we see the senseless and putrefying remains of a brave man before us, it is hard to conceive that this is all of him; that this is the thing which some few hours ago could reason and discourse; was fit to govern a kingdom, or to instruct mankind; could despise flesh and sense, and govern all his bodily appetites and inclinations, and was adorned with all divine graces and virtues; was the glory and pride of the age. And is this dead carcase, which we now see, the whole of him? Or was there a more divine inhabitant, which animated this earthly machine, which gave life and beauty to it, but which is now removed?

When we consider that we consist of soul and body, which are the two distinct parts of man, this will teach us to take care of both. For can any man who believes he has a soul be concerned only for his body? A compound creature cannot be happy, unless both parts of him enjoy their proper pleasures. He who enjoys only the pleasures of the body is never the happier for having a human and reasonable soul: the soul of a beast would have done as well, and it may be better; for brute creatures relish bodily pleasures as much, and it may be more, than men do; and reason is very troublesome to those men who resolve to live like brutes, for it makes them ashamed and afraid, which in many cases hinders, or at least allays their pleasures. And why should not a man desire the full and entire happiness of a man? Why should he despise any part of himself, and that the best part too? And therefore, at least, we ought to take as much care of our souls as of our bodies. Do we adorn our bodies that we may be fit to be seen, and to converse with men, and may receive those respects which are due to our quality and fortune, and shall we not adorn our souls too with those Christian graces which make us lovely in the sight of God and men?—Dean Sherlock.

THE ART OF DECIPHERING THE EFFACED INSCRIPTIONS OF COINS.

It is obvious that we can have no guarantee that specimens of the works of antiquity,—relics of the times gone by,—should pass through the long vale of years, unmutilated, and uncontaminated: for such works were neither laid up for the benefit of the moderns, nor were many of them, individually at least, held to be of extraordinary value at the time of their production. To this number may be referred the coins and medals which were struck by races of people long ago extinct, and which now speak so much for their general history, their manners, customs, laws, religion, and arts.

As we cannot therefore hope to handle a coin clean from the Greek or Roman mint, and as we are naturally curious to know from what part of the entire body, a fragment of antiquity may have fallen off, so, when we hold in our hands a piece of money, used perhaps for the commonest purposes of life, by our terrestrial predecessors of 1500 or 2000 years ago, we are eager to find out from it the nation it once belonged to, the prince whose portrait seems to glimmer through the metallic mist, and all the subsidiary information, which it may furnish, and which our general knowledge of the history of that nation concurs to elucidate. When, therefore, the coin has become much or wholly defaced by accident, or the wear and tear of time, it is evident that any means which shall bring again to light that which has been effaced, are desirable to practise, even if the coin should be so eventually injured; for it is plain that an illegible coin or medal is of no use whatever, beyond its mere weight of metal.

It has been for a long time known that the legend, or inscription, on a worn-out coin may be traced and deciphered by putting the coin on a hot iron. It is not known who first made this discovery, nor was an explanation of this fact ever afforded until very lately.

When the coin is laid upon a red-hot iron, an oxidation takes place over its whole surface. The term *oxidation* implies a combination of the metal with the oxygen of the atmosphere; and the oxidized portion therefore, covers the metal like a thin plate, depending for the colour or tint which it assumes upon its thickness. The film of oxide produced by laying the coin upon a hot iron changes its tint with the intensity or continuance of the heat. The parts, however, where the figure or the letters of the inscription had existed, oxidate at a different rate from the surrounding parts; so that these letters exhibit their shapes, and become legible in consequence of the film of oxide which covers them having a different thickness, and therefore reflecting a different tint from that of the adjacent parts*. The tints thus developed sometimes pass through many orders of brilliant colours, particularly pink and green, and settle in a bronze, and sometimes in a black tint, which rests upon the figure and inscription alone. In some cases the tint left on the trace of the letters is so very faint that it can but just be seen, and may be entirely removed by a slight rub of the finger.

The curious results obtained in the manner just described, are thus accounted for by Sir David Brewster. When we take a plane disk of silver, that has never been hammered or compressed, its surface will oxidate equally,

* For the colours of thin plates, as depending upon their thickness, see the papers on the Soap-Bubble, Vol. XV. p. 199 *et seq.*

if all its parts be equally heated. But, in the process of converting this disk into a coin, the sunk parts are those which were most compressed by the prominent parts of the die; and the elevated parts are those which were least compressed; the metal being in the latter condition left, as it were, more in its natural state. The raised letters and figures on a coin have, therefore, less density than the other parts, and these parts oxidate sooner or at a lower temperature. When the letters of the legend are worn off by friction, the parts immediately below them have also less density than the surrounding metal; and the site, as it were, of the letters therefore, receives from heat a degree of oxidation, and a colour, different from that of the surrounding surface. Hence ensues the revival of the invisible letters by unequal oxidation.

The influence of the difference of density may likewise be observed in the beautiful oxidations which are produced on the surface of highly polished steel, heated in contact with air, at temperatures between 430° and 630°. When the steel has hard portions, called by the workmen, *pins*, the uniform tint of the film of oxide stops near these hard portions, which always exhibit colours different from those of the rest of the mass. These parts, owing to their greater density, absorb oxygen from the air in a less degree than the surrounding portions. The steel, then expanded by heat, absorbs oxygen, which, being united with the metal, forms the coloured film. As the heat increases, a greater quantity of oxygen is absorbed, and the film increases in thickness.

When the experiment is often repeated with the same coin, and the oxidations successively removed after each experiment, the film of oxide continues to diminish, and at last, ceases to appear at all; but it recovers the property in the course of time. When the coin is put upon the hot iron, and when the oxidation is greatest, a smoke arises from the coin, which diminishes, like the film of oxide, by constant repetition. Sir David Brewster has found from many trials that it is always the raised parts of a coin, and in modern coins the elevated ledge round the inscription, that first become oxidated.

There is a very curious experiment connected with this subject, which goes beyond anything hitherto related. This to take a silver coin, (which answers the purpose best), and after polishing the surface as much as possible, to make the raised parts rough by the action of an acid, the sunk parts being left clean, and polished. If the coin thus prepared be placed upon a mass of red-hot iron, and removed into a dark room, the inscription upon it will become more luminous than the rest, so that it may be distinctly read off. The coin should be viewed, during this experiment, through a tube blackened on the inside; by which means the eye will be in a fitter state for observing the effect, and will be somewhat protected from the heat and smoke. If, instead of polishing the depressed parts, and roughening the raised parts of the coin, we polish the raised parts, and roughen the depressed parts, the inscription and figure will be less luminous than the depressed parts; but we shall be able to distinguish them, from their seeming to be traced in black characters on a white ground. The different appearances of a coin, according as the raised parts are polished or roughened, are shown in the figures at the head of this article. In the left hand cut, the raised parts are polished: in the right hand cut they are roughened.

The most surprising form of this experiment is when we use a coin from which the inscription has been either wholly obliterated, or so much obliterated as to be illegible: such are the shillings and sixpences of the last generation: those of England, France, and Spain, serve the purpose of the experiment very nicely. The results with copper coins are more difficult to obtain, and are less palpable: but when we lay a silver coin upon the red-hot iron, the places of the letters and figures become oxidated, and the film of oxide radiating more powerfully than the rest of the coin will be more luminous than the other parts; so that the inscription, illegible before, will be now distinctly read. The acid is not absolutely necessary to this experiment, when using a thin silver coin.

To understand the reason why inscriptions become legible in the dark, whether the coin is in a perfect state, or the letters of it are worn off, we must remember that all black or rough surfaces radiate light more than polished or smooth surfaces; and hence the inscription is luminous when it is rough, and obscure when it is polished; and the letters covered with black oxide are more luminous than the adjacent parts, on account of the superior radiation of light by the black oxide which covers them.

Sir David Brewster suggests that by means such as these, invisible writing might be conveyed from one place to another, by impressing it upon a metallic surface, and afterwards erasing it by grinding and polishing that surface quite smooth. When exposed to the requisite degree of heat, the secret writing would start forth in oxidated letters.

Some old coins, when being heated, have given out brilliant red globules, accompanied with a smell of sulphur; and sometimes, small globules, like those of quicksilver, have exuded from the surface. Some coins give out an intolerable smell; and an Indian pagoda became perfectly black, when placed upon the heated iron. These results are due to the impurity of the metal and the nature of the alloy.

The cut at the head of this article shows the reverse of a Roman coin of the second century, in which the province of Britain is personified. The figure BRITANNIA is found upon many other Roman coins, which were struck for Britain, and has been now used in the English copper coinage for 168 years past. The legend implies that the emperor Commodus, whose bust is on the obverse, was "Pontifex Maximus,"—"in the 10th year of his tribunal authority,"—"in the 7th year of his reign," or A.D. 186,—and, "in the 4th year of his consulship:"—also, that he was "Father of his country."

BOUND up amid the thousand ties
Of man's mysterious sympathies,
Is that strange feeling, that hath birth
While, gazing on our parent earth,
The spirit to itself transfers
The sunshine or the gloom of hers.
Who hath not felt the peace that lies
On fields that smile 'neath summer skies?
Who to th' eternal hymn of ocean
Responds not with as pure devotion,
Nor drinks a joy of sterner mood
From rugged hill or pathless wood?—HANKINSON.

WHEN Smeaton had reflected long, in search of that form which would be best fitted to resist the combined action of wind and waves, he found it in the trunk of the oak. When Watt was employed to conduct the supply of water across the Clyde to the city of Glasgow, he borrowed his admirable contrivance of a flexible water-main from considering the flexibility of the lobster's tail; and so, when Mr. Brunel was engaged in superintending the construction of the tunnel under the Thames, it was from observing the head of an apparently insignificant insect, that he derived his first conception of the ingenious shield, which he introduced in advance of the workmen, to protect them from being crushed by the falling in of the earth. It becomes us, then, while we trace the operations of human ingenuity in adapting means to its proposed ends, to raise our thoughts to that Divine architect who has imprinted traces of his wisdom and power on all his works: causing the heavens to declare his glory, and the earth, throughout all its domains of land, sea, and air, to show forth his handiwork.—DR. POTTER.

RURAL SPORTS FOR THE MONTHS
DECEMBER.

We have chosen the Ptarmigan as the subject of our present article, not because the pursuit of that bird is esteemed by sportsmen as deserving particular notice, —on the contrary, it is characterised as a tame and uninteresting sport, requiring little enterprise, and gaining little merit.—but that we may draw the attention of our readers to some remarkable circumstances in the natural history of this tenant of the regions of frost and snow.

The ptarmigan belongs to the grouse family, and is sometimes called the "white grouse." Its home is near the tops of elevated mountains, and it seems so averse to the kindly influence of the sun's rays, that as soon as the snow begins to melt on the sides of the hills, it ascends still higher, until it gains the summit, where it forms holes, and burrows in the snow. Most of the Alpine districts of Europe abound in ptarmigans, and even as far north as Greenland they are very numerous. The Greenlanders catch them in nooses dropped over their necks, and account them a great luxury: they eat them, either dressed or raw, and do not object to them in a decaying state; the intestines are reckoned a great delicacy, and are eaten with train-oil and berries. The Greenland women adorn themselves with the tail feathers of the bird, and the men wear shirts made of the skins, with the feathers next the body. The Laplanders take these birds by making a hedge of birch branches with small openings at intervals. In each of these openings is a snare, and the ptarmigans in their search after the young buds and catkins of the trees are easily caught.

The Hudson's Bay ptarmigan, otherwise called the *willow partridge*, is remarkable on account of the immense numbers which are taken. Their flesh is much esteemed by the Europeans of the settlement, and they are said to be as tame as chickens. The usual mode of taking them is by fixing a net twenty feet square, to four poles, and by means of a rope fastened to these props to have the power of pulling down the net at any moment. Persons are employed to drive the birds in the direction of the net, and when a sufficient number are assembled, the concealed manager of the rope lets down the net, and often entraps from fifty to sixty. From November to the end of April it is reckoned that ten thousand of these birds are taken for the use of the settlement. The name of willow partridge has been given to the ptarmigans of that country from their assembling in large flocks at the beginning of October to feed among the willows.

In Britain, this bird is only to be met with on the summits of the highest hills, among the Highlands of Scotland, in the Hebrides and Orkneys, and sometimes on the lofty hills of Cumberland and Wales. We may traverse the heights covered with heather, and still be far below the abode of the ptarmigan. To reach his cliffy and desolate abode you must ascend until, in the language of one of our popular writers,

> You begin at last to feel alone, severed entirely from the world of society, of life, and of growth, and committed to the solitude of the ancient hills and immeasurable sky. The snow lies thick on the side of the summit, and even peers over the top, defying the utmost efforts of solstitial heat. There is no plant under your feet, save lichen on the rock, apparently as hard and stony as that to which it adheres—it can hardly be said to grow—and moss in some crevice, undistinguishable from the dull and cold mud into which the storms of many winters have abraded the granite.

And what are the objects which present themselves to notice in this region of snow?

> A few mottled pebbles, or at least what appear to be so, each about twice the size of your hand, lie at some distance, where the decomposed rock, and the rudiments of what may be called the most elevated mountain vegetation, just begin to ruffle the surface. By and by, a cloud shadows the sun, the air blows chill as November, and a few drops fall, freezing or melting in their descent, you cannot tell which. The mottled pebbles begin to move: you throw a stone at them, to show that you can move pebbles as well as the mountain. The stone hits beyond them; they run towards your feet as if claiming protection: they are birds,—ptarmigan,—the uppermost tenants of the island, whom not even winds which could uproot forests, and frosts which could all but congeal mercury, can drive from these their mountain haunts. It has often been observed that of all the human inhabitants of the earth, the mountaineer, be his mountain ever so barren, is the last to quit, and the same holds true of the mountain-bird.

The sportsmen who find pleasure in climbing the granite cliffs, and wading the winter snows in which the ptarmigans delight to bury themselves, are few indeed. An excursion of this nature must be regarded as a journey of curiosity, for the purpose of viewing the wilder and more imposing features of our country, rather than as a sporting engagement which is to yield any profitable return. The flesh of the ptarmigan except when taken very early in the season, is much inferior to that of the red-grouse, being less juicy, and deficient in flavour. The chief interest attaching to the bird arises from the peculiarity of its haunts, the simplicity of its habits, and the periodical changes in the colour of its plumage.

The plumage of the ptarmigan has been called "a natural thermometer," on account of its variations in colour with the variations in temperature during the different seasons of the year. The summer plumage is yellow, more or less inclining to brown, and elegantly mottled with black, grey, and white: the quills of the wings, twenty-four in number, have black shafts and white webs. The tail feathers are sixteen in number, seven on each side, and two in the centre, the shafts of which are black. As autumn advances, these colours undergo a gradual change: the black and brown become paler and paler; then the grey fades, until when the winter is fully set in, the whole plumage becomes of a snowy white, except the eye-streak in the male, the outer tail feathers, and the shafts of the middle ones. This change does not take place in consequence of a moult, or falling-off of coloured feathers, to be replaced by white ones; but the change actually takes place in the colour of the feathers themselves, while at the same time the plumage becomes fuller, thicker, and more downy; the bill is almost concealed, and the legs are covered down to the very toes with hair-like feathers.

These changes in colours, have been attributed to a kind provision of nature to enable the birds more effectually to escape their enemies. Now it is certainly true, that the summer vest of the ptarmigan bears some resemblance to the broken tints produced by the brown patches of heath on the mountain slopes, which this bird frequents, and so far screens it from observation: so also does its white livery serve the purpose of concealment when its home is in the snow. But if this be one of the reasons for the change, it is not the principal one. Many of the polar animals, and others which inhabit the colder regions of the temperate zone, undergo a change in colour similar to that of the ptarmigan, and the rapidity of the change has been observed to depend upon the severity of the season. A little attention to the science of heat, will assist us on the present occasion. The temperature of all bodies is greatly influenced by the colour of their surfaces; those which are white reflect most of the heat which falls upon them those that are black absorb it; so that if a white and a black body be exposed to a high temperature, the latter will be heated much sooner than the former. But on the other hand, a white body parts with its heat slowly, —a black body quickly; hence, if both be placed in a low temperature, the latter will cool much sooner than the former. These facts have long been established with respect to inanimate matter, but they apply with equal force to animals: by the healthy performance of certain functions (chiefly, respiration and the circulation

of the blood), heat is constantly supplied, and thus is maintained a temperature necessary to perpetuate the functions of life: a portion of the animal heat always escapes from the surface of the body by radiation: if the heat escape faster than it is formed, the temperature of the animal body will fall to such a point, that it is no longer sufficient to maintain life;—but, if the body be protected by substances which conduct and radiate heat very slowly, such for example as our winter clothing and the feathers, wool and fur of animals, heat escapes less quickly than it is formed, and the animal is thus enabled to inhabit a spot, the temperature of which is greatly below that of its own body.

Not only is the plumage of the ptarmigan adapted by Providence for the peculiar situation in which the bird is placed, but in respect of its general form the same adaptation is apparent. It stands more firmly on its legs than the other birds of its race, and presents but little resistance to the wind, in consequence of its crouching attitude. Its feet and claws, though feathered down to the very toes, are not impeded or encumbered on this account, for the surface of the mountains is generally dry, and pools of water are speedily converted into ice. The bill is remarkably strong, and is well fitted to crush the hard berries, lichens, &c., on which the bird feeds. It is a habit with the gallinidæ in general to swallow gravel, and the proportion found in the stomach of the ptarmigan is said to exceed that of any other bird. In winter these birds congregate, and live peaceably together, sheltering themselves in holes in the earth, or snow, and even burrowing through the latter until they contrive to reach the scanty vegetation lying beneath its surface. About the month of June they disperse in pairs, and make circular nests a little lower down the mountain. The number of their eggs varies from six to twelve or fifteen; and the young birds are covered with down, of a colour similar to that of their parents' summer plumage. This descent of the ptarmigan to a somewhat lower situation during the breeding season, is probably with a view to find more abundant food for their young, but it subjects them to many dangers, which in their more elevated home they had altogether escaped. The old birds are often obliged to fight desperately in defence of their young, and as soon as possible they lead them away to a place of greater security in the mountain tops. Ptarmigans are the favourite food of the great snowy owl, which is also an inhabitant of the most desolate regions of the North. On perceiving this well known and powerful enemy the affrighted birds dive instantly into the loose snow, and make their way beneath it to a considerable distance. In its favourite mountain summit, the ptarmigan has few enemies, being above the range of the fox, the mountain cat, and the martin, and also out of the usual hunting scenes of the raven and the eagle, so that is not so liable to the attacks of these formidable enemies, as are the red grouse, and other tenants of the heathery regions below. As this bird is thus exempted from some of the dangers common to its kind, so is it apparently deficient in sagacity and resource when attacked. The expression of the head is stupid or simple. Mr. Daniel calls them silly birds, that are tame enough to bear driving like poultry, and suffer a stone to be flung at them without their rising; with all this gentleness of disposition, it is however, difficult to domesticate them. Yet in their own regions they soon become reconciled to the sight of man, and may be caught and destroyed by any device he may choose to employ against them. They are so little anxious to hide themselves that a sportsman meeting with a party may shoot them one by one, till he has destroyed them all, the survivors after each discharge making no attempt to get out of the reach of the shot. They never, on any occasion take long flights or soar aloft in the air, but fly by taking a short circle like pigeons.

Another species of ptarmigan, known as the rock ptarmigan, has lately been brought into this country, but it extremely rare. It is somewhat smaller in size, and may be distinguished from the common ptarmigan, by the black feathers of the back being cut into upon the edges, with patches of yellow only; which, contrasted with the larger size and grey plumage of the other, serves to render it conspicuous.

ENTRANCE INTO THE TROPICS.

As we found our way into the Tropics, we observed that the atmosphere became clearer and clearer; no mists were perceptible, the sun seldom obscured, and the appearance of the sky and stars at night peculiarly bright and clear. The moon, in these latitudes, often assumes an almost vertical position; and many of the stars which belong to the southern hemisphere are visible. Before daylight one morning, the captain called me upon deck to look at the Southern Cross; which is certainly a constellation of rare beauty. One of the five stars which form the cross, however, is of inferior magnitude, and not in the true position; which somewhat mars the image. When I turned towards the east, I enjoyed a still finer spectacle. The horn of an almost expiring moon, Venus, and Mars, were in all their splendour: and the profusion of azure, lilac, ultramarine, pea-green, orange, and crimson, which mantled the sky about half an hour before sunrise, I never before saw equalled.—GURNEY.

To ask the question, "What is knowledge?" is but another way of inquiring, "What is God?" for human learning deserves the name of knowledge only in the proportion in which it is able to display the workings of the All-wise Creator in the visible and unseen universe of which we form a part. There is, indeed, a mass of general information that is useful to the individual in his relations to the society of his home and country; but this is, for the most part, confined to transient customs and opinions, and is for ever being swallowed up in that flood of knowledge which has increased from age to age, spreading its waves with a wider sweep through each succeeding generation, and which will ere long embrace in one common bond of intelligence the great human family upon earth.—*Manuscript Letters.*

THE real philosopher, who knows that all the kinds of truth are intimately connected, and that all the best hopes and encouragements which are granted to our nature must be consistent with truth, will be satisfied and confirmed, rather than surprised and disturbed, to find the natural sciences leading him to the borders of a higher region. To him it will appear natural and reasonable, that, after journeying so long among the beautiful and orderly laws by which the universe is governed, we find ourselves at last approaching to a source of order and law, and intellectual beauty:—that, after venturing into the region of life, and feeling, and will, we are led to believe the fountain of life, and will, not to be itself unintelligent and dead, but to be a living mind, a power which aims as well as acts. To us this doctrine appears like the natural cadence of the tones to which we have so long been listening; and without such a final strain our ears would have been left craving and unsatisfied. We have been lingering long amid the harmonies of law and symmetry, constancy and development; and these notes, though their music was sweet and deep, must too often have sounded to the ear of our moral nature, as vague and unmeaning melodies, floating in the air around us, but conveying no definite thought, moulded into no intelligible announcement. But one passage which we have again and again caught by snatches, though sometimes interrupted and lost, at last swells in our ears full, clear, and decided; and the religious "Hymn in honour of the Creator," to which Galen so gladly lent his voice, and in which the best physiologists of succeeding times have ever joined, is filled into a richer and deeper harmony by the greatest philosophers of these later days, and will roll on hereafter, the "perpetual song" of the temple of science.—*History of the Inductive Sciences, by the* REV. WILLIAM WHEWELL.

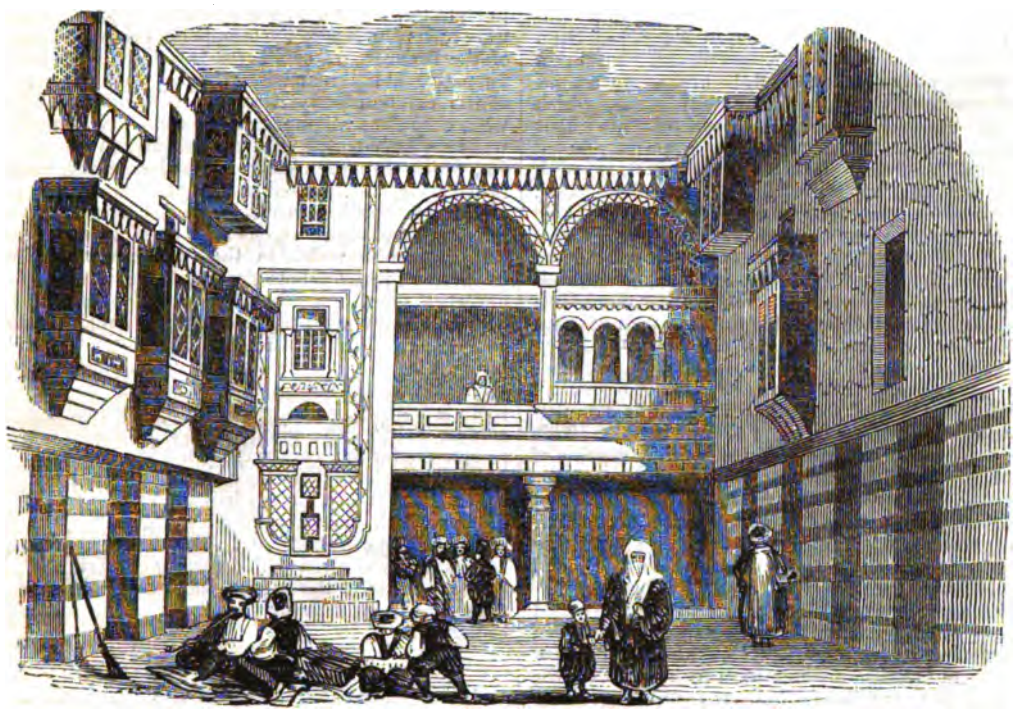
LONDON:
JOHN WILLIAM PARKER, WEST STRAND.
PUBLISHED IN WEEKLY NUMBERS, PRICE ONE PENNY, AND IN MONTHLY PARTS, PRICE SIXPENCE.
Sold by all Booksellers and Newsvenders in the Kingdom.

THE

Saturday Magazine.

No. 609. SUPPLEMENT, DECEMBER, 1841. { PRICE ONE PENNY.

THE HOUSES OF ALL NATIONS. III.



INTERIOR OF AN ORIENTAL HOUSE.

1. Houses of Northern Africa and Egypt.

The inhabitants of Northern Africa have for several centuries been connected together by certain ties which enable us for some purposes to consider them as one people. Morocco, Tunis, Fez, and till lately Algiers, have all had Mohammedanism as the recognised religion of the state. Their mosques are similar, their manners are similar, and, as may be supposed, their dwellings also belong, in their general characters, to one class. All the countries which we have mentioned, lie pretty nearly under the same latitude, and are exposed to about an equal temperature, a circumstance that has much influence on the form of the buildings. Under the general name of *Barbary*, therefore, we will now consider the principal features in the houses of the better classes of the inhabitants.

Large doors, spacious chambers, marble pavements, cloistered courts, and fountains, are very general in these countries, and accord well with the nature of the climate. The windows, too, open not into the street, but into the central courts or quadrangles, a type of the jealous dispositions of the inhabitants. The streets are generally narrow, probably to shield the houses as much as possible from the sun. The entrance to a house from the street is through a porch or gateway, with benches on each side, where the master of the family receives visits and despatches business. From hence an opening is seen into the quadrangle or court, which is open above, and is generally paved with marble. When a large assembly is to be received, such as upon the occasion of any grand entertainment, the court is the place of reception, where mats and carpets are spread for the company. It has been supposed by Dr. Shaw, that on most of the occasions when our Saviour and his apostles are said to have entered houses and preached there, &c., the court or quadrangle was the place of reception; for there are many points of resemblance between the houses of Judæa and those of Barbary.

In the warm season, this court is covered by an awning to protect the visitors from the heat of sun: this awning is stretched out by ropes, and can be folded or drawn out at pleasure. The court is generally surrounded with a colonnade, over which there is a gallery of the same width as the colonnade, with a balustrade or lattice-work in front of it. From the colonnade and gallery there are openings into large spacious chambers, of the same length with the court, but seldom communicating with one another. One of them frequently serves for a whole family, particularly when a father allows his married children to live in the same house with him, or when two or more persons join in the rental of one house. The walls of these chambers, in the houses of the wealthy, are covered, from the middle downwards, with white, blue, red or green hangings, either of velvet or of damask: these are suspended by hooks, so as to be taken down at pleasure. Above these hangings is a more permanent covering for the wall, such as stucco, fretwork, paintings, &c. The ceiling is generally of wainscot, and painted in various devices, frequently including sentences from the Koran. The floors are generally covered with painted tiles: but as the Moors seldom use any sort of seat equivalent to our chair, the floor is covered with carpets and mats of rich materials, on which the inmates either sit cross-legged or lie at full length. Near the wall, however, is frequently placed a kind of raised platform, on which are narrow beds or mattresses, as well as pillows.

The stairs to the upper story, when there is more than one, are situated sometimes in the porch, and at others in the court. This staircase leads not only to the upper story, but also to the gallery and to the roof of the house, where the Moors pass much of their time in the evening. The flat roofs are covered with plaster, and are surrounded either by low walls or by balustrades. The terraces serve for many domestic purposes for the use of the inmates: linen is dried there: figs and raisins are exposed there to the heat of the sun: it is also frequently used as a place of devotion.

Many of these houses have a smaller one attached to them, consisting of one or two rooms and a terrace. Some of them are built over the porch or gateway of the larger house, to which there is a door of communication. These smaller houses are frequently used as places of retirement from the bustle of the central quadrangle. It has been supposed that many of the houses in Syria, Palestine, &c., were anciently provided with little retired chambers such as we here speak of,—that is, chambers secluded in some degree from the rest of the habitable mansion. The following passages in the Bible seem to allude to some arrangement of this kind: 2 Kings 4. 10, "Let us make a little chamber, I pray thee, on the wall; and let us set for him there a bed, and a table, and a stool, and a candlestick,"—Judges iii. 20, "And Ehud came unto him; and he was sitting in a summer parlour, which he had for himself alone."—2 Sam. xviii. 23, "And the king was much moved, and went up to the chamber over the gate, and wept." While we are on this subject, we may briefly allude to an explanation which Dr. Shaw has offered of a part of Scripture, which, without knowing the structure of the houses in the countries alluded to, cannot be well understood. In St. Mark ii. 2, we read, "And they came unto him bringing one sick of the palsy, which was borne by four. And when they could not come nigh unto him for the press, they uncovered the roof where he was: and when they had broken it up, they let down the bed wherein the sick of the palsy lay." Now in such houses as we are accustomed to, it would appear more difficult to make a sufficiently large hole through the roof than to force a passage through the throng. But by considering the nature of the houses in those climates, Dr. Shaw thinks the following explanation will remove every difficulty. The only part of a house large enough to admit a multitude of people was the open court or quadrangle. This court was covered in hot weather by an awning capable of being drawn aside by means of ropes. The tops of the houses were flat, so that persons could walk from roof to roof without difficulty, and stairs led up to the roof. It therefore seems probable, that the sick man was carried up to the roof of the house, that the awning was drawn aside, and that he was lowered into the open court by ropes.

That portion of Northern Africa occupied by Algiers need not claim our attention here, for in so far as it differs, in the construction of its houses, from the countries of Barbary generally, the Supplements which have been given on the subject of Algiers in the *Saturday Magazine* will have conveyed a sufficient idea. We will therefore proceed eastward, and approach countries which have filled a more important page in history. The territory once known by the famed name of Carthage occupied a portion of the space between Egypt and what is now called Algiers, but at present, little exists here to claim notice in this paper.

Egypt has many remarkable peculiarities, chiefly arising from the mixture of Turkish and Arabic manners and modes of living prevalent in the country. The houses of Egypt depend a good deal, for their form and character, on the religion of the inhabitants; they have in general either one or two stories above the ground floor, and there is often a small unpaved court in the middle of the building, with various apartments surrounding it. There is a narrow passage leading into this court from the street, and in the passage is a stone seat for the porter and other servants. In the court itself is generally to be seen a well for supplying the house with water; and the windows of the principal apartments look into the court, several doors leading from the court to the rooms: in all these cases there is one door leading exclusively to the women's apartments. The apartment in which strangers are received is generally on the ground floor, with a grated or latticed window looking into the court. This reception-room has generally a fountain in the middle, and is paved with black and white marble. Along two sides of the room runs a raised platform covered with mats and carpets, and visitors generally take off their shoes before they step upon this. The mode in which persons seat themselves in such countries will assist us in explaining many of the customs mentioned in the Holy Scriptures. The matted or carpetted floor is frequently the only seat, and if shoes, soiled with the dust of the streets, were to tread on this matting, the garments would certainly be disfigured by it: hence a sense of cleanliness, as well as certain rites connected with religion, lead the inhabitants to take off their shoes previous to stepping upon the raised platform. There are, however, frequently mattrasses and cushions, stuffed with cotton and covered with cloth or silk, ranged round the sides of the apartment. The walls of this apartment contain recesses and cupboards, for the reception of water-bottles, coffee-cups, and other domestic vessels. The ceiling of the room is divided into compartments: those parts over the two raised platforms being formed of carved beams of wood; while that over the central part is carved into highly decorated and fanciful ornaments, and painted of very diverse colours. A chandelier is frequently suspended from the centre.

All the apartments are lofty, generally about fourteen feet high. The upper rooms have often, besides lattice-work windows, others of coloured glass, representing flowers, fruit, birds, &c. These coloured windows are about two feet high and one wide: they are placed above the other windows, and are more for ornament than for use. "On the plastered walls of some apartments," says Mr. Lane, "are rude paintings of the temple of Mekkeh, or of the tomb of the Prophet, or of flowers and other objects, executed by native Mooslim artists, who have not the least notion of the rules of perspective, and who consequently deface what they thus attempt to decorate. Sometimes, also, the walls are ornamented with Arabic inscriptions, of maxims, &c, which are more usually written on paper, in an embellished style, and inclosed in glazed frames. No chambers are furnished as bed-rooms. The bed, in the day-time, is rolled up, and placed on one side, or in an adjoining closet, called khuzneh, which, in the winter, is a sleeping place: in summer, many people sleep upon the house-top. A mat or carpet, spread upon the raised part of the stone floor, and a deewan, (a row of cushions round the wall,) constitute the complete furniture of a room. For meals, a round tray is brought in, and placed upon a low stool, and the company sit round it on the ground. There is no fireplace: the room is warmed, when necessary, by burning charcoal in a chafing-dish." The kitchens, however, have several small receptacles for fire, constructed on a kind of bench of brick. Many houses have at the top a sloping shed of boards, directed towards the north or north-west, in order that the cool breezes which blow from those quarters may be conveyed to an open apartment below. The roof of the house is flat, and generally covered with a coating of plaster.

For a notice of the houses and domestic arrangements of Cairo in particular, we refer to our recent sketches of that capital.

2. Houses of Asiatic Turkey.

Africa is united to Asia in a singular manner. The two continents are connected only by a narrow slip of land,—the isthmus of Suez,—and this isthmus, as well as the country near it, is little better than a dreary desert. Having passed this desert, we come to Palestine, and, keeping along the eastern shore of the Mediterranean Sea, we arrive at Jaffa, Acre, Aleppo, and other towns. After this, the great peninsula of Asia Minor brings us to the Black Sea, and the provinces of European Turkey. Now throughout this range of country, Turkish influence is more or less prevalent, and there are a good many features common to all the towns extending from Jerusalem at the south-east to Smyrna at the north-west. The city of Aleppo is well situated as a representative of the towns of Western Asia generally. To the north of it is Asia Minor: to the south, Palestine; and to the east, are those numerous provinces which have, at one time or other, formed part of the Persian Empire. Its houses, as well as its inhabitants, present features of the Turkish, Persian, Syriac, and Arabian countries: and we shall do well to consider rather minutely the nature of the dwellings.

Aleppo is governed by a bashaw or officer, and the residence of this officer, as well as of the other principal officers of state, are called *Seraglios*, (a Persian word for a palace or great house.) These seraglios are huge piles of building, with nothing like architectural grace about them. The entrance is through a large court; and the gate is arched and decorated with marble. Persons of rank pass on horseback directly to the foot of the grand staircase. The state apartments are of an oblong form, with lofty flat ceilings, and are well lighted by a row of large windows. The walls and ceilings are adorned with flowers, fruit, and fanciful ornaments, painted, gilt and varnished: and verses from the Koran are seldom omitted as part of the decoration. Each state apartment has an elevated platform on each side constituting a *divan*, where distinguished visitors are invited to seat themselves. The divan is covered with mattresses, over which is thrown a covering of cloth; and oblong cushions, stuffed with cotton and faced with silk or velvet, are ranged round next the wall;—the *corners* of

these divans are considered as the places of honour. The lower and central part of the apartment is occupied by pages and others; indeed all visitors, except those of rank, are to remain on the central division of the room, and must not presume to step on the divan.

The apartments of the principal officers are fitted up on the same plan, but with less splendour: the divans in their rooms being made to serve as beds at night, by employing additional mattrasses and coverlids.

The women's apartments are always separated from the main part of the building, and consist of several suites of rooms, ranged round an open court. This court contains a shrubbery, a basin with a fountain, arbours of slight latticed frames, and other arrangements for producing a cool place of retreat from the heat incident to the climate. There are also two open apartments, called the *divan*, and the *kaah*, which are a sort of open reception rooms, where the different members of a family may congregate. These are particularly delightful, from the means taken,—such as fountains, &c.,—to make them cool. The private apartments of the females are ranged round the court, with windows looking into the court, to the exclusion of any other. The sleeping rooms are usually on the ground floor, and the visiting, or reception rooms are above them.

Such are the general modes of construction in the mansions of the bashaws, agas, effendis, and officers of government, at Aleppo.

The houses of the merchants seldom have a court in front, the entrance being immediately from the street, by a large door. The outer apartments are small, and furnished in a plain but neat manner. They serve only for the reception of familiar visitors in the morning, or at supper: for on extraordinary occasions, the harems, or female apartments, are made use of, which, in point of elegance, often rival those of the seraglios, and in the richness of the furniture sometimes excel them.

The houses of the Turks of middle rank have seldom more than one court; but many of them have a kaah, and all have a divan, with a little garden and fountain before it. Their habitations are thus airy, and kept very neat. From this rank, down to the lowest order of Turks, there are houses of various degrees of comfort; but they have nearly all something which they can call a divan, and a few bushes or shrubs by way of garden:—their best room is rudely painted, and decorated with such ornaments as they can procure.

The houses of the Christians of the upper class consist generally of a central court surrounded by apartments. The entrance to these houses is scarcely to be distinguished from those of the Turks; and the interior is fitted up with a good deal of taste and neatness.

The Jews, both European and native, have houses built much on the same fashion as the other inhabitants of the city; and in some instances their dwellings display no little magnificence within. The poorer classes of Jews, however, are worse lodged than the poor of the other religious communities.

The roofs of nearly all the better kinds of houses are flat, and plastered with a composition of mortar, tar, ashes, and sand, which in time becomes very hard; but, when not laid on at the proper season, the terrace is apt to crack in the winter. These flat roofs or terraces are separated by parapet walls, and most of the natives sleep on them in summer. The Europeans who live contiguous have doors of communication, and by means of the terraces on their own houses and those on the bazaars, can make a large circuit without descending into the street. The native inhabitants, however, do not throw open a whole line of terraces in this way; but frequently heighten the wall of division by means of a screen.

We will avail ourselves of the present opportunity for speaking of a part of the domestic arrangement which in warm climates has a considerable influence on the construction of a town, as well as upon the manners of the inhabitants,—we mean the custom of bathing. Not only does a sultry climate occasion a necessity for a frequent use of the bath, but the Mohammedan religion requires that ablutions should be made at certain hours of the day. Most of the large mansions in Persia, Turkey, Syria, Egypt, Barbary, &c., have baths within them; but the general custom is, to attend public baths, a large number of which are to be found in most of their cities. These baths or bagnios being pretty nearly the same everywhere, we will take those of Aleppo as a general representative of all, and will avail ourselves of Dr. Russell's account of them.

The outer room of the hummam or bagnio is called the *burany*, and is large, lofty, covered with a dome, and paved with marble. It has windows towards the street, but is lighted chiefly by the lantern of the dome. A broad stone platform, or *mustaby*, about four feet high, is built close to the wall on each side, which being spread with mats and carpets, forms a divan on which the bathers may undress and repose. A large marble fountain in the middle serves both as an ornament, and for rinsing the bagnio linen, which is afterwards hung to dry on lines stretched above. The bathers, as well as the servants, walk in this outer chamber in slippers, for the stoves having but small influence there, the wet pavement is cold to the naked feet.

From the *burany* a door opens into a narrow passage, leading to the *wastany*, or middle chamber, which has a *mustaby*, or raised platform, for the accommodation of such as may choose to sit there, and is furnished with several round or oblong stone basins, about a foot and a half in diameter, into each of which two pipes open with brass cocks, the one conveying hot, the other cold water. These are called *jura*, and are fixed to the wall two feet from the pavement. There are also brazen bowls for laving out the water. The thermometer in the burany is about 64° Fahr.;—in the passage 75°—and in the wastany, or middle chamber, 90°.

From the middle chamber, a door opens immediately into the inner chamber, or *juany*, which is much larger than the wustany, and heated to about 100°. It has no *mustaby*, or platform, so that the bathers sit or recline on the pavement, which towards the centre is excessively hot. The middle and inner rooms are less lofty than the outer one, and are covered with small cupolas, from which they receive a dull light, by means of a few round apertures, glazed with a thick coloured glass. At each corner of the juany is a small open recess, in one of which there is a basin about four feet deep, called the *murtas*, serving occasionally for a temperate bath. The bagnios are heated by stoves underneath, and the ordinary temperature is about 100°.

It must be borne in mind, that the mode of bathing adopted in these countries is altogether different from that employed in England. There is no plunging into a large body of water, and in a few minutes emerging from it. The bather, first, in the outer room, throws off his usual dress, and puts on a slight bathing dress. He then passes into the middle room, and gets gradually warmed by its temperature. From thence he passes into the inner or bath room, which is heated so highly that in a few minutes he is in a profuse perspiration. He then lies down on the warm marble pavement, and is rubbed all over by an attendant, with a kind of perfumed soap; after which he is well drenched by bowls of warm clean water, and rubbed with dry towels. The bathing being thus completed, he passes into the middle room, puts on his slippers, wraps himself completely in a blanket, and then smokes a cigar, drinks coffee, and converses with his friends or neighbours:—indeed, this middle room is a general place of rendezvous for friends, who often go to the bath as much to meet one another as for the pleasure of bathing. This is particularly the case with females: by the customs of the country they are so much immured, that they are glad of the relief from constraint afforded by the bath; and it is not unusual for them to take sweetmeats, fruits, spices, &c., to regale themselves and friends in the middle chamber, after having taken the bath. Lady M. W. Montagu tells us that this is then a famous place for gossip. When the bathers have remained as long as they please in the middle room, they proceed to the outer room, resume their dresses, and leave the place. There are some baths for men, and others for women; and a third class devoted to women in the forenoon, and men in the afternoon; the bathers being attended by servants of their own sex.

8. Houses of Persia and Arabia.

The most general characteristics of the houses of the wealthier classes in Persia have been the same from age to age, and the accounts of different travellers pretty well agree on the subject. Generally speaking, such houses are built in the middle of a fine garden, and present little or none of their beauty to the street; for there is little else to be seen but a dead wall, with a great gate in the middle of it, and perhaps a screen or wall within the gate, to prevent passers-by from seeing the mansion,—great privacy being sought for in this respect. It is not often that the Persian mansions have more than one story,—indeed, in most warm climates, the houses are more remarkable for length and depth than for height. In the portion of the house nearest the entrance gate is generally a little piazza

or open room, where the general business of the inhabitant is transacted. Beyond this piazza is a large hall, from twelve to twenty feet high, which is the place of meeting, on the occasion of great entertainments, &c. On the hinder side of the house is often another piazza, with a fount in playing in front of it, beyond which shady walks are frequently seen. At each corner of the large hall is a parlour, or dwelling room, between which are small open square courts, with entrances from the great hall: the object of this and similar arrangements seems to be, that in a climate so sultry as that of Persia, it is desirable to have as many open doors as possible, to admit air into the central hall: there is often a fountain playing in the middle of the hall.

The walls of the houses are built sometimes of burned bricks, and sometimes of bricks dried in the sun. The walls are of considerable thickness, and the roof of the great hall is arched, and some feet higher than the smaller rooms near it. The roofs of the buildings on every side of the hall are flat, and have stairs leading up to them. These flat roofs form one of the most distinguishing features of Asiatic dwellings. Nothing can exceed the beauty of the sky at those hours of the evening when the sun has withdrawn his scorching rays. It is at such a time that the Persian, taking up a mattrass to the roof, there luxuriates in the indolent enjoyment of the open air:—often, indeed, he passes the night there, except at certain seasons, when, in consequence of the powerful evaporation during the day, a piercing cold is felt at night.

The kitchens, and other domestic offices of the house, are generally at some distance to the right or left, and the hall is the medium of communication between all of them. Sometimes the rooms have chimneys, but at other times there is an arrangement of a charcoal fire thus managed:—A hole, four or five feet in diameter, and one or two deep, is sunk in the floor of the room, and in this is kindled a charcoal fire. The hole is covered over with a thick board, and this again is covered with a carpet, so that persons by sitting round in a circle, and placing their feet under the carpet, can keep themselves warm in cold weather. Air is admitted to the fire, and smoke is conducted from it, by pipes laid beneath the floor. The floors of the rooms are either paved, or covered with a hard cement, on which a coarse cloth is laid, and over that a carpet. The walls of some of the rooms are lined with fine tiles a part of the way up, and are painted above.

Such are the general characters of the houses in that wide expanse of country included under the general name of Persia. But it must be here understood, that these remarks apply chiefly to the large towns; for in the wide and uncultivated wastes which cover so large a portion of the Persian empire, the same kind of rude and temporary tents are observable as are employed by the roving Arabs. In a country like England, we happily do not know what it is to have our large towns separated from each other by sandy wastes, where neither man nor beast can find food and water without great difficulty:—the arrangements of a manufacturing town and those of an agricultural village are certainly sufficiently distinct; but still, a roving population, who, when they have gathered all the herbage and fruits at one part of the country, strike their tents, and proceed in a body to another locality, is unknown to us, however much it prevails in Persia.

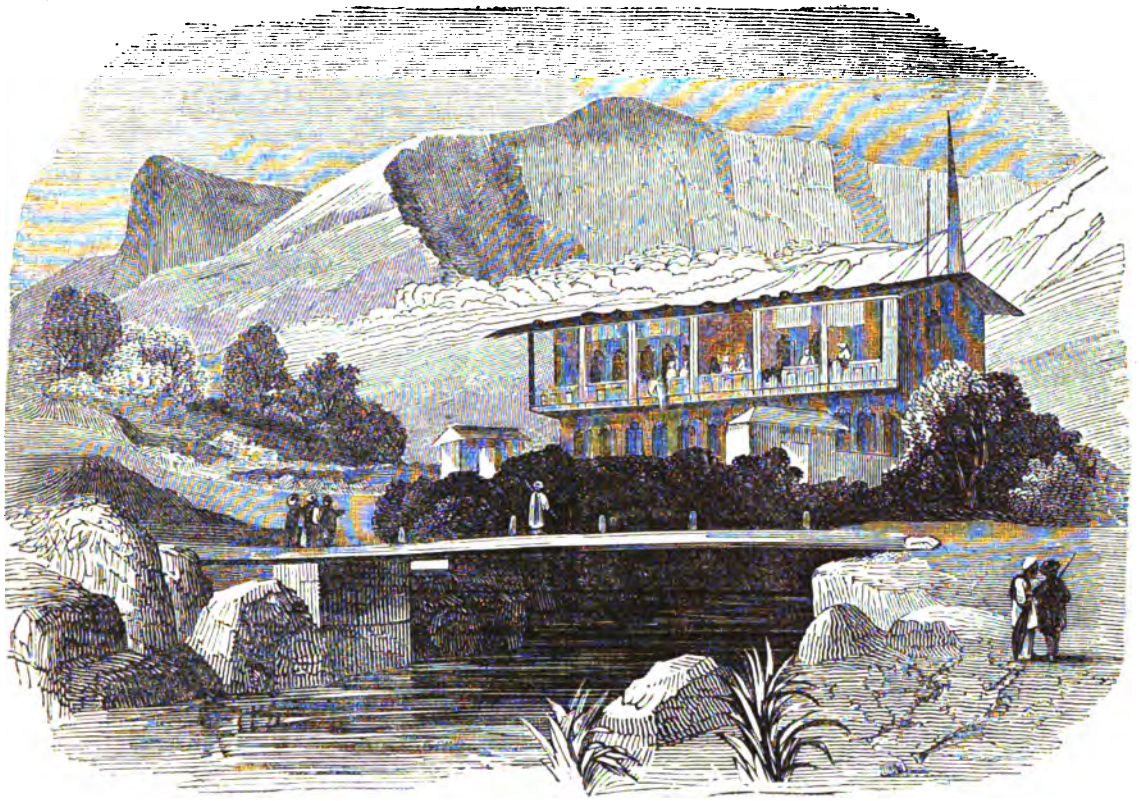
These remarks apply also to Arabia. We have, however, nothing to say here of the roving tribes, but shall briefly speak of the populous towns. The city of Mecca consists of streets arranged with tolerable regularity, and there is something more pleasing in the fronts of the houses than is usually observed in Oriental towns. The houses have generally two rows of windows, with balconies covered with blinds. There are even several large windows, quite open, as in Europe, but the greater number are covered with a curtain, like a Venetian blind, made of palm-leaves: these blinds are extremely light, and screen the apartments from the sun, without interrupting the passage of the air: they fold up at pleasure at the upper part. The houses are solidly built with stone, and are three, four, and even more stories in height. The fronts are ornamented with bases, mouldings, and paintings, which give them a very graceful appearance. It is very rare to find a door that has not a base, with steps and small seats on both sides. The blinds of the balconies are not very close, and holes are cut in different parts of them. The roofs of the houses form terraces, surrounded with a wall about seven feet high, open at certain spaces which are occupied by a railing of red and white bricks, placed symmetrically, leaving holes for the circulation of the air. All the staircases are narrow, dark, and steep. The rooms are well-proportioned, large, and lofty, and have, besides the large windows and balconies, a second row of smaller windows. The beauty of the houses may be considered as the remains of the ancient splendour of Mecca. Every inhabitant has an interest in adorning his dwelling, in order to induce the hadgi, or pilgrims, to lodge with him during their sojourn at Mecca, for this is one of the principal sources of wealth to the inhabitants, on account of the high terms demanded and paid.

Another town in Arabia of which we may briefly speak is Mocha, a name rendered familiar to us by the excellent coffee brought from its neighbourhood. In this town the principal buildings, such as the residences of the government officers and principal inhabitants, have no pretensions, externally, to architectural elegance, but still are not devoid of beauty, from their turretted tops and fantastic ornaments in white stucco. The windows are in general small, stuck into the wall in an irregular manner, closed with lattices, and sometimes opening into a wooden, carved-work balcony. In the upper apartments there is generally a range of circular windows, above the others, filled, instead of glass, with a thin layer of a peculiar transparent stone, which is found in veins in a mountain near Sanaa. None of these can be opened, and only a few of the lower ones,—a consequence of which is that a thorough current of fresh air is rare in these houses, yet the people who inhabit them do not appear to be oppressed by the heat, although it is insupportable to European visitors. The floors as well as the roofs of the larger houses are made of *chunam*, which is sustained by beams with pieces of plank or thin slips of wood, laid across and close to each other. As a carpenter's level is seldom used in their buildings, the floors are generally very uneven; but where couches and cushions are used instead of chairs and tables, this is not felt to be much inconvenience. The internal construction of the houses is generally bad: the passages are long and narrow, and the staircases so steep that it is frequently difficult to mount them. Very little time is used in the construction of any of these buildings: constant care is therefore necessary to prevent the introduction of moisture. With caution, the houses last many years, but if neglected, they soon become a heap of rubbish, for the sun-dried bricks then resume their original form of mud.

The streets and bazaars of Mocha present a lively appearance, from the commingling of many different classes and ranks of people. Lord Valentia says:—"Under the coarse awnings of its narrow bazaars you meet the well-dressed merchants in robes of woollen cloth, and from above the folds of the snow-white turban you see a red woollen cap, with a tassel of purple silk. At every step you meet the black, the half-naked Abyssinian, straight as the young areca, with a nose sufficiently prominent to give expression to his features, and having his curled woolly hair dyed with a reddish yellow,—the foppery of his country. Then there is the stout Arab porter, in his coarse brown garment, bowing under a heavy load of dates, the matting all oozing, and clammy with the luscious burden. Lastly, you have the Bedouin, with the hue of the desert on his cheek, the sinewy limb, the eye dark and fiery. He hath a small turban, a close-bodied vest, a coarse sash, all of dull colours; the arm, the leg, are bare; the brown bosom, open to the sun and wind; sandals on his feet; a broad, straight, two-edged sword in his hand; a long and ready poniard in his girdle. For the cold night wind he has a cloak of goat's hair, or black or white, or made in long broad stripes of both colours. He walks erect, and moves directly to his front, giving place to none. . . . . Then there are the cook-shops, with their hot cakes of bread, and their large coppers, with portions of meat and fowls, swimming in ghee, and ready for the traveller. And a step farther the caravanserais and coffee-houses, with groups of townsmen and traders, reclining on couches of the date-leaf, smoking their small hookahs, sipping their kishu, and perpetually stroking their long beards." There are other towns in Arabia, such as Medina, and Aden, once a very important port at the southern entrance into the Red Sea. But neither of these need call for particular notice here: Medina presents many features similar to Mecca, and Aden to Mocha.

4. Houses of India and China.

We will travel eastward, and notice the recent seat of war, Afghanistan.—The houses of the higher classes in Afghanistan are described with some minuteness by the Hon. Mountstuart Elphinstone, in his *Account of the Kingdom of*



INDIAN MOUNTAIN DWELLING.

Caubul. The class of inhabitants whose dwellings he thus portrays, includes all the Douranee chiefs and heads of tribes, with the Persians and Tanjiks, who hold offices about the king. "These residences," says our author, "are all enclosed by high walls, and contain (besides stables, lodging for servants, &c.,) three or four different courts, generally laid out in gardens, with ponds and fountains. One side of each court is occupied by a building, comprising various small apartments in two or three stories, and some large halls, which occupy the middle of the building for its whole height. The halls are supported by tall wooden pillars and Moorish arches, carved, ornamented, and painted like the rest of the hall. The upper rooms open on the halls by galleries which run along halfway up the wall, and are set off with pillars and arches. The halls, being only separated by pillars and sashes of open wood-work, can always be thrown into one by removing the sashes. The back of the innermost one is a solid wall, in which is the fire-place. The upper part of this wall is ornamented with false arches, which look like a continuation of the galleries, and which, as well as the real arches, are filled up on great occasions with paintings in oil, looking-glasses, and other ornaments. There are smaller rooms along the other sides of the court-yards; and among them are comfortable apartments for the retirement of the master of the house, one of which, at least, is fitted up with glass windows for cold weather. There are fire-places in many of these different apartments. The walls and pillars are ornamented with flowers in various patterns, painted in distemper, or in oil, on a white ground, composed of a sort of whitewash, mixed with shining particles, which is called *seem gil*, or silver earth. The doors are of carved wood, and, in winter, are covered with curtains of velvet, embroidered cloth, and brocade. In all the rooms, at a height which is easily within reach, are arched recesses in the walls, which are painted very richly, and, by a strange depravity of taste, are thought to be embellished by glass bottles of various coloured pickles and preserves. The poor also have these recesses, which they ornament with China cups, and in which they store their fruits for winter consumption: the curtains in their houses are of quilted chintz, or of canvas, painted with birds, beasts, flowers, &c., in oil. The pictures in the houses of the rich are mostly, if not entirely, done in Persia: the figures are old Persian kings and warriors, young men and women drinking together, or scenes from some of the Persian poems. The principal ornaments of the rooms of the great, are carpets and felts, which serve them in place of all other furniture. Persian carpets are too well known in England to require any description, but there is a kind made in Heraut which excels all others I ever saw; they are made of wool, but so fine and glossy, and dyed with such brilliant colours, that they appear to be of silk; carpets of highly wrought shawl are also used; but this piece of magnificence must be very rarely used from the enormous expense*.

"There are felts for sitting on, spread close to the wall all round the room, except where the entrance is, which, in the halls, is always at one end. They are brownish-grey, with patterns of flowers in dim colours; that at the top of the room is broader than the others, which are about three feet and a half or four feet broad. On the upper felt are smaller carpets of embroidered silk or velvet, with cushions of velvet for distinguished visitors."

The peninsula of India, like most countries which have had many conquerors, presents a great diversity of dwellings, not only in splendour and costliness, but also in style. As, however, the Hindoos are the people who are most peculiarly connected with that country, we will give a brief sketch of the dwellings of Hindoos of rank. Benares presents the most marked appearance of Hindoo origin: in this city the amiable Bishop Heber visited a house which he has described. It belonged to two minors, the sons of an opulent citizen. It was a building of striking appearance, and had a large vacant area before the door. The house was very irregular, and built round a small court, two sides of which were taken up by the dwelling-house, and the others by the offices. It was four lofty stories in height, with a tower over the gate, of one story more. The front had small windows of various forms, some of them projecting on brackets, and beautifully carved, and a great part of the wall itself was covered with carved patterns of sprigs, leaves, and flowers, like an old-fashioned paper. The whole was of stone, but painted a deep red. The general effect of the house was very much like that of some of the palaces at Venice, as represented in Canaletti's views. There was an entrance-gateway, with a groined arch of rich carving, and on each side was a deep, richly-carved recess, like a shrine, in which were idols, with lamps before them,—the household gods of the family. The inner court was covered with plantains

* The price demanded for a shawl-carpet of very large size was 10 000*l*, and this was said to be far below its value.

and rose-trees, with a raised and ornamented well in its centre: on the left hand a narrow and steep flight of stone steps led to the first floor. On this floor were several rooms, not very large, but beautifully carved, the principal one, which occupied the first floor of the gateway, having an arcade round it. The centre, about fifteen feet square, was raised and covered with a carpet. The arcade round was flagged with stones, and was so contrived that on a very short notice four streams of water, one in the centre of each side, descended from the roof like a permanent shower-bath, and fell into stone basins, sunk beneath the floor, and covered with a sort of open fretwork, also of stone. "These rooms," says Bishop Heber, "were hung with a good many English prints, of the common paltry description which was fashionable twenty years ago, such as Sterne and poor Maria, (the boys supposed this to be a doctor feeling a lady's pulse,) the Sorrows of Werter, &c., together with a daub of the present Emperor of Delhi, and several portraits in oil of a much better kind, of the father of these boys, some of his powerful native friends and employers, and of a very beautiful woman, of European complexion, but in an Eastern dress, of whom the boys knew nothing, or would say nothing more, than that the picture was painted for their father by Hall-jee of Patna. I did not indeed repeat the question, because I knew the reluctance with which all Eastern nations speak of their women, but it certainly had the appearance of a portrait, and, as well as the old Baboo's picture, would have been called a creditable painting in most gentlemen's houses in England."

The houses of the Mohammedan inhabitants of India do not differ in any marked degree from those of Persia or Turkey: the morals, the religion, and the general social arrangements, being nearly the same. In the southern provinces of India, such as Mysore, &c., the houses are of very large dimensions, inclosing numerous courts, surrounded by buildings. There is also a very remarkable class of erections to be seen in the hilly districts towards the western shore of the peninsula: these are called *hill-forts*. On the very summit of a hill are often built, not only the fortification necessary for the defence of a place, but numerous residences both for the governors and the governed. There are but few fortified places in the world more formidable, in a military point of view, than these forts; because not only are the walls and general defensive arrangements of a very complete kind, but the hill on which they are situated is often so precipitous, that it is with the utmost difficulty the ascent to them is accomplished.

The countries to the south-east of India, such as the Birman Empire, Siam, Malaya, &c., do not display such specimens of elegant buildings as are to be found in India, and therefore need not occupy much of our attention. The nature of the houses, in and near the Birman Empire, may be judged of from the following remarks of Symes, in his *Embassy to Ava*:—"The streets of Pegu are spacious, as are those of all the Birman towns that I have seen. The new town is well paved with brick, which the ruins of the old plentifully supply; and on each side of the way there is a drain to carry off the water. The houses of the meanest peasants of Pegu, and throughout the Birman empire, possess manifest advantages over Indian dwellings, by being raised from the ground either on wooden posts or bamboos, according to the size of the building. The habitations of the higher ranks are usually elevated six or eight feet, and those of the humbler classes, three or four. There are no brick buildings either in Pegu or Rangoon, except such as belong to the king, or are dedicated to the divinity Gaudma; his majesty having prohibited the use of brick or stone in private buildings. The houses, therefore, are all made of matting, or of sheathing-boards, supported on bamboos or posts; but from their being composed of such combustible materials the inhabitants are under continual dread of fire, against which they take every precaution. The roofs are lightly covered, and at each door stands a long bamboo, with an iron hook at the end, to pull down the thatch. There is also another pole, with a grating of iron at the extremity, about three feet square, to suppress flame by pressure. Almost every house has earthen pots, filled with water, on the roof; and a particular class of people, whose business it is to extinguish fires, perambulate the streets during the night."

The eastern part of Asia is occupied by that remarkable people, the Chinese, a people who seem to pride themselves in being different in manners, in dress, in language, in manufactures, from every other; who think that their country is the centre of civilization, and that the Europeans are a sort of barbarous race inhabiting some remote corner of the earth. The houses of the wealthy in China bear a considerable resemblance to those which have been brought to light at Pompeii. They consist, generally speaking, of a ground floor, containing several apartments, which are lighted by windows looking into a central court. The principal apartment is near the entrance, and is devoted to the reception of visitors, &c. The inner apartments are separated from each other by doorways covered with silk hangings. The houses are frequently entered by a triple gateway, consisting of a large folding door in the middle, and a smaller one on each side: the large entrance is for distinguished visitors, and the smaller for those of humbler rank. It is not unusual to see cylindrical lanterns hung at the sides of the gate, on which the name and title of the inhabitant are written, so as to be read by night as well as by day. In the best houses, there are seldom any stairs, except a few at the entrance. The foundations of the houses are of extremely solid stone-work, not unfrequently of granite. The walls are of blue brick, and frequently have an artificial surface laid on them. Stucco-work of considerable delicacy, representing animals, flowers, fruit, &c., is frequently seen, and is executed at a low price. Inner partition walls are often divided into compartments which are filled with a kind of fret-work of porcelain. The roof is covered with tiles, whose tranverse section approaches to a semicircle: they are ranged along with their concave side uppermost, to serve as channels for the rain; other tiles are then laid with their concave side downwards, so as to hide the joinings of the tiles;—it is supposed that this plan was derived from the use of split bamboos, as is customary among the Malays.

Sir G. Staunton describes the house of a mandarin eye which may be taken as a representative of the more costly dwellings. The whole inclosure of the dwelling was in the form of a parallelogram, and surrounded by a high brick wall, the outside of which exhibited a plain blank surface, except near one of its angles, where the gateway opened into a narrow street, little promising the handsome structure withinside. The wall in its whole length supported the upper ridge of roof, whose lower edges resting upon an interior wall parallel to the other, formed a long range of buildings divided into apartments for servants and offices. The rest of the inclosure was subdivided into several quadrangular courts of different sizes. In each quadrangle were buildings upon platforms of granite, and surrounded by a colonnade. The columns were of wood, nearly sixteen feet in height, and as many inches in diameter at the lower end, decreasing to the upper extremity about one-sixth. They had neither capital nor base, according to the strict meaning of these terms in Grecian architecture, nor any divisions of that part called the entablature, it being plain up to the cornice: at the lower end they were let into hollows cut into stones for their reception, and which formed a circular ring round each somewhat in the Tuscan manner. Between the columns, for about one-fourth the length of the shaft from the cornice downwards, was carved and ornamented wood-work, which might be termed the entablature, and was of a different colour from the columns, which were universally red. This colonnade served to support that part of the roof which projected beyond the wall-plate in a curve, turning up at the angles. By means of these roofed colonnades, every part of these extensive buildings might be visited under cover. The number of pillars throughout the whole was not fewer than six hundred.

Annexed to the principal apartment was an elevated building, intended for the purposes of a private theatre and concert room, with retiring apartments behind, and a gallery for spectators round it. None of the buildings were above one story high, except that which composed the ladies' apartment during the residence of the owner: it was situated in the inmost quadrangle. The front consisted of one long and lofty hall, with windows of Chinese paper, through which no objects could be distinguished on the other side. At the back of this hall was a gallery, at a height of about ten feet, which led to several small rooms, lighted only from the hall. These inner windows were of silk gauze, stretched on frames of wood, and worked by the needle with representations of flowers, fruit, birds, and insects; others were painted in water-colours. This apartment was fitted up in a neater style, though upon a smaller scale, than most of the others. The whole of this part of the building was calculated for private apartments. In one of the outer quadrangles was a basin or pond of water, in the midst of which was built a stone room, exactly in the shape of one of the

covered barges of the country. In others of the quadrangles were planted trees, and in the largest, a heap of rocks was rudely piled; and at one end was a spot laid out for a garden in miniature, but not yet finished.

5. Houses of America.

Under the general name of America are included as great a diversity of countries as were, perhaps, ever classed together. There is Canada, with its British institutions mingled with those of the French inhabitants of the Lower Province;—the United States, with its northern states almost English, and its southern almost Spanish;—Mexico, with its Spanish character engrafted upon the ancient Aztecs;—and the numerous states of South America, all of which once belonged to Spain and Portugal, but all of which are now republics, or something approaching thereto:—lastly, there are the native Indian tribes, from the fur-hunters of the frozen regions in the north, to Patagonia in the south. It may well be supposed that the dwellings, as well as the character of the inhabitants vary exceedingly in different parts of this wide tract. Still, we may class all under three heads,—Indian extraction, English extraction, and Spanish or Portuguese extraction. The dwellings of the Indians we need not consider here, for they universally come under the denomination of "rude" habitations. Those of Canada, and the northern portions of the United States, we may omit for a different reason, viz., the better classes of habitations very closely resemble those of England. We shall therefore merely offer a few remarks on those parts which have once been either Spanish or Portuguese colonies.

Humboldt considers the modern city of Mexico to be one of the finest cities ever built by Europeans. There are but few cities that can be compared to it, for the uniform level of the ground on which it is built, the regularity and breadth of the streets, and the extent of the public *places* or squares. The architecture is generally of a very pure style; and there are edifices of a very beautiful construction. The exterior of the houses is not loaded with ornament. Two sorts of hewn stone (the porous amygdaloid called *tetsontli*, and especially a porphyry of vitreous feldspar without quartz,) give to the Mexican buildings an air of solidity, and sometimes of magnificence. There are none of those wooden balconies and galleries to be seen which disfigure so much all the European cities in both the Indies. The balustrades and gates are all of Biscay iron, ornamented with bronze; and the houses, instead of roofs, have terraces like those in Italy, and other southern countries. Many of the streets are nearly two miles in length, perfectly level and straight, and with the ends terminating in a view of the mountains that surround the valley in which the city is situated. The houses are, in general, of a uniform height, most of them having three stories, each from fifteen to twenty feet high. The fronts of most of the houses are painted in distemper, white, crimson, brown, or light green; and owing to the dryness of the atmosphere, they retain their beauty unimpaired for many years. Some inscriptions are painted upon them taken from Scripture, or stanzas addressed to the Virgin. Many of the houses are entirely covered with glazed porcelain in a variety of elegant designs, by which a rich mosaic-like appearance is produced. The walls of the great staircases are frequently covered in the same manner, and mixed with a profusion of gilding, which in contrast with the blue and white porcelain has a splendid effect.

There are no other cities or towns of Mexico at all meriting notice in respect of their dwellings, as the farther we recede from the capital the more does a commingling of European and Indian manners become perceptible.

At the southward of Mexico, and occupying the northern portion of South America, are numerous states which were once Spanish but are now republican; but anarchy so reigns there, that we know but little of the actual condition of the towns and houses.

The residences of the inhabitants of Chili may be judged of from those of its capital, *Santiago*. This city is divided into rectangular and equal squares, separated by streets forty feet broad. Each compartment or square measures about four hundred feet each way; and each square is called a *quadro*. The streets are ill-paved with small round stones brought from the bed of the river, and have a gutter through the middle; but the best streets are paved on one side with slabs of porphyry, quarried from a neighbouring hill. The great central square, or *plaza*, contains the house of the director, the palace of justice, the prison, and other public offices, together with the cathedral, the bishop's palace, and private residences. All these buildings are built of brick, plastered, and whitewashed, and present no specimens of architectural elegance. The general nature of the private dwellings in the city, even those inhabited by the wealthy classes, may be estimated from the fact, that the usual materials are ill-shaped sun-dried bricks, and mud instead of mortar. The cathedral is the only stone building in the city.

Valparaiso, the principal port of Chili, consists of little more than one street: the houses are huddled together without order:—the church is built chiefly of mud. There is a suburb called Almendral, the houses of which are small and incommodious, of one ground-floor only, built of sun-dried bricks, plastered with mud and whitewashed. Some have rude corridors projecting over the foot-way; others have raised brick paths in front of their houses; but generally the foot-path is merely a raised heap of earth. Some of the houses are roofed with tiles, while others are thatched with rushes, grass or palm-leaves; some have passages leading from the street; but in most cases, the door opens directly from the street to the apartments; and as many of them have no light but what they receive from the door, this door is generally left open. Some of the rooms have small windows with panelled shutters, having clumsy wooden bars in front, rudely carved: some few are painted red; but generally they are not painted at all.

It will thus be seen that Chili does not present much to call forth admiration in the construction or appearance of its houses. Indeed along the whole western coast of South America, but little attention seems to be paid to the construction of private dwellings; for earthquakes are so frequent that anything lofty would almost inevitably be made a heap of ruins. Ulloa's description of the houses of Lima, the capital of Peru, though requiring alterations in some parts to suit it to the state of things at the present day, may be taken as a tolerably near approach to the truth. He says:—"The houses, though for the most part low, are commodious, and make a good appearance. They are all of baxareque and quincha. They appear indeed to be composed of more solid materials, both with regard to the thickness of the principal walls, and the imitation of cornices on them." The principal parts are of wood, morticed into the rafters of the roof. The walls are lined within and without with wild canes and osiers, so that the timber-work is wholly inclosed. The osiers are plastered over with clay, and whitewashed. Cornices and porticos of rough workmanship are then added, and whitewashed to imitate stone. The roofs are flat, and covered only so far as is necessary to keep out wind and sun. Such is the general character of the houses in Lima. Those which are inhabited by Europeans are in many cases built somewhat in the style prevalent in their own country; but always with attention to the necessary character of being low, seldom exceeding two stories in height, and very often not exceeding one. Mr. Miers, a recent traveller in South America, describes the houses at Mendoza, an important town in the La Plata provinces, as being nearly such as we have here described:—all of one story: built of adobes, (sun-dried bricks,) plastered with mud, and whitewashed. Even the governor's house was of this character.

On crossing to the eastern shore of South America, the city of Buenos Ayres does not seem to present many more attractions than those we have described,—considered with reference to the houses. Mr. Miers says, "The houses fronting the beach I mistook for gaols, as they had no glass sashes, and the open windows were defended by iron gratings; but on entering the town, I found all the houses constructed in the same manner, mostly of one ground floor: their deserted appearance, and shabby exterior, bore more the semblance of gaols than the habitations of an industrious, civilized, and free people." Mr. Miers and his companions were lodged and entertained at the house of one of the most respectable inhabitants; and the mode of taking meals, &c., may serve to convey some idea of the manners of the inhabitants. Mr. M. was placed at the top of the family table,—the usual seat of guests, according to the custom of the country. Three black female slaves waited at table. About twenty dishes, of different sorts, were brought, each one after the other was removed,—containing bread and vermicelli soup, different kinds of stews, boiled beef, roast veal, lettuce salad, and various sorts of vegetables. The wish was, that the guests should eat some of every dish,—no easy matter among such a number. After dinner, one of the slaves said a long unintelligible grace, upon the conclusion of which all the family crossed themselves

upon their foreheads, mouths, and breasts: the cloth was not removed, but was kept for the dessert, which consisted of a profusion of ripe figs, peaches, nectarines, apples, pears, and oranges. Nothing but water was drunk at or after dinner. A basin and towel were brought, in which all the company washed their hands in the same water.

Rio Janeiro, the capital of Brazil, is not provided with houses of a kind proportionate to the extent and importance of the city. The streets, which are straight and narrow, are paved with granite, but are scarcely provided with any light at night. The houses, which are generally of two stories, and low and narrow in proportion to their depth, are, for the most part, built of blocks of granite: the upper story however, is often of wood. The thresholds, door-posts, lintels, and window-frames, are of massy quartz or feldspar, brought from Bahia in a state ready for use. The roofs are universally covered with semi-cylindrical tiles. The lower story is commonly occupied by a shop or warehouse; the second (and third, if there be one) by the family apartments, to which there are long and narrow passages taken from the ground floor, and communicating with the street. The houses used formerly to have an appendage called a *jealousy*, or *jalousie*, which were gloomy projections from the upper windows. These jalousies were raised on a platform of stone, two and half feet broad, and extended to the top of the window. They were formed of lattice-work of a fanciful pattern, divided into panels or compartments, some of which were fitted up with hinges at the top, so as to form a sort of flap, which, when opened a little way, allowed persons in the balcony to look down into the street without being seen themselves. They gave to the fronts of the houses a dull, heavy, and suspicious appearance, and have been superseded by light open balconies.

Until the recent changes in the political circumstances of Brazil, the houses of Rio Janeiro, as well as the general manufactures produced, felt the ill-effects of a lazy spirit that used to distinguish the white inhabitants: they were not clever artisans,—they were too lazy to attain skill,—and they were too proud to carry even their own working tools through the streets. Mr. Luccock has given an amusing account of the combined effect of these three blots:—"It was necessary to open a lock, of which I had lost the key; and the skill necessary to pick it was so rare, that the master and waiter of the hotel where I then lodged, were greatly perplexed with my inquiries, at what place it was to be found. At length they advised me to apply to an English carpenter who had been settled in Rio about two years, and employed several men, one of whom he requested to go with me, for then masters did not venture to command; assuring me that the man would execute what I wanted. He detained me a long time, but, to compensate for the delay, made his appearance, at last, in full dress, with a cocked hat, shoe and knee-buckles, and other corresponding paraphernalia. At the door of the house he still loitered, wishing to hire some black man to carry his hammer, chisel, and another small instrument. I suggested that they were light, and proposed to carry a part or the whole of them myself; but this would have been as great a practical solecism as using his own hands. The gentleman waited patiently until a negro appeared; then made his bargain, and proceeded in due state, followed by his temporary servant. The task was soon finished, by breaking the lock, instead of picking it, when the man of importance, making me a profound bow, stalked off with his follower." Since the period of Mr. Luccock's visit, however, many changes and improvements have occurred.

There is a little spot at the southern extremity of Africa, we mean the Cape of Good Hope, to which we will make a brief allusion, before we bring to a conclusion our allotted task. "The streets of Cape Town," says Mr. Burchell, "though not paved, are kept always in excellent order, and derive an agreeable freshness from trees of oak and pinaster, planted here and there on either side." The houses are built of brick, and faced with a stucco of lime. They are decorated in front with cornices and many architectural ornaments, and frequently with figures both in high and low relief. In front of each house is a paved platform (called the *stoep*, or step) usually eight or ten feet wide, and commonly from two to four feet above the level of the street. It is ascended by steps, and has, generally, a seat at each end; and here the inhabitants frequently walk or sit to enjoy the air, or to converse with passing friends. The roofs are flat having no greater inclination than is just sufficient to throw off the rain water; and they form a very commodious terrace. On account of the mildness of the Cape winters, fire-places are nowhere seen excepting in the kitchens. Within, the houses, to an eye accustomed to the elegant decorations and furniture of an English apartment, have the appearance of a want of comfort, and, not having a plastered ceiling, the bare joists and floor above give them the look of an unfinished building. But the loftiness and size of the rooms render them respectable, and contribute greatly to their coolness in summer. This description, however, was more applicable some years ago than it is at present, for the English residents are sure to introduce English habits and customs more or less into the country.

AN INDIAN HAREM.

TO OUR READERS.

THE close of this, the Nineteenth Volume of the *Saturday Magazine*, affords a favourable opportunity for considering the state of the popular literature of this country at the period when our arduous task commenced*—of taking a retrospect of our labours in fulfilment of the duties then undertaken by us—of stating the mode in which we propose to continue our services—and of making a general acknowledgment of the valuable advice and assistance with which we have been favoured by a numerous body of friendly correspondents.

It must be in the recollection of our readers, that at the time when we commenced our undertaking the humbler classes of the community were largely supplied with cheap pamphlets, of the most dangerous and deplorable tendency;—writings in which the most holy things were lightly treated of,—the most endearing of human ties derided,—and our revered institutions held up to open scorn and contempt. Works of this character could be superseded only by creating a taste for something better, and we have reason to believe that the *Saturday Magazine* has, under the Divine blessing, had a large share in creating and supplying that wholesome taste which is now so general.

We cannot but feel gratitude and satisfaction at the success which has attended our efforts, at the same time that we experience the pleasing consciousness of having remitted no endeavours on our part to deserve and fully to justify the public approbation. We may, at least, claim the negative merit of having most carefully excluded from our pages every expression and sentiment which can be considered as indicative of party feelings and objectionable principles, or which might be likely to offend good taste and delicacy of feeling.

Bearing in mind the responsibility attaching to the management of a work which finds its way into the hands of so many thousands, and the power which it gives of inculcating the most salutary as well as the most fatal opinions, we have uniformly endeavoured to infuse a Christian character and tendency into every branch of popular knowledge. We have not arrogated to ourselves the office of instructors on sacred topics, by interfering with the labours of those whose especial department it is to set forth and to defend the principles of our established faith, nor have we permitted our pages to become the vehicle for controversy and discussion;—but we have nevertheless been anxious to give such a general bearing to our various articles as to subserve the purposes of religion, and to show, wherever the subject has naturally led us to do so, the blessings and advantages we derive from the position, in which, as members of a Christian community and of a Scriptural church, we are privileged to stand.

It is sufficiently evident that the object of a popular periodical, such as the *Saturday Magazine*, is to administer to the instruction and amusement, not of one class of readers in particular, but of all: so that into whatever hands the work may fall, there may be found among its various subjects something to suit the tastes and inclinations of every reader. The man of literature, in glancing over the contents of such a work, will meet with some notice of eminent men or of their writings, and be able to refresh his memory or even to add to his knowledge from this humble source. The scientific man

* "The dangers to which the Faith is exposed are not confined to the open assaults of the infidel and the blasphemer. It cannot be doubted, that great and extensive mischief may arise to religion, and to the eternal welfare of mankind, should our general literature, and the various institutions of society, acquire a character and tendency decidedly contrary to the principles and practice of Christianity. That such has been, for some time past, the general and growing tendency of much of our popular literature, will hardly be denied; but the extent of the evil is known only to those who have made it the subject of particular investigation. It has pervaded more or less every branch of it, and in some departments has evidently been the result of deliberate and systematic operations. This has been the case more especially with *cheap* periodical literature, and with works of education. Books intended for the instruction of the rising generation have, in some cases, been made instruments for teaching the doctrines of Materialism under the disguise of scientific principles. In others, where religious instruction was indispensable, it has been of the most inefficient and exceptionable kind. But the prevailing and most successful method has been to separate knowledge from religion, and to keep religion altogether out of sight. This has been the principle upon which too many works of instruction have lately been conducted. And thus they have become mischievous in a greater degree in proportion to the popularity which they have acquired.

"The same course has been pursued with regard to cheap periodicals, which have lately become so considerable a branch of literature. The disreputable part of them have been made vehicles for the diffusion of infidel opinions, which have been conveyed in every shape that was likely to render them agreeable to the class of persons to whom they were addressed. Everything has been done in order to enlist the passions on their side; they have been mingled with entertaining literature of every kind, that the poison might be rendered more palatable to general readers. And, until lately, except in a few instances, the whole force of this new power was directed against the principles and institutions of religion. Nor has the magnitude and extent of this power been as yet completely developed, or its effects fully known. It has, however, been ascertained that the circulation of such papers in and from London alone amounted, in May last, to the number of 300,000 weekly: and of these not one was professedly engaged in the defence or support of religion and its institutions. The greater part of them were openly and avowedly hostile to everything which is sacred and dear to our religious feelings, and the remainder wholly dedicated to other objects."—*Report of the Society for Promoting Christian Knowledge, for the year* 1832.

may also expect to find an abstract, however brief, of the inventions and discoveries, which render the present age remarkable above all that have preceded it. The lover of Nature will not be disappointed of information respecting his favourite study, but will find the animals, the plants, the minerals in which he is interested, brought under his notice from time to time, either in the lighter sketches of natural scenery, or the more scientific arrangements of accurate description. The agriculturist, the manufacturer, the mechanic, and even the intelligent operative, will also find easy details respecting the various branches of industry in which they are engaged, and the productions with which the civilized world is enriched by means of their various pursuits.

With this general view of the objects of a cheap periodical work, we have supplied to the readers of the *Saturday Magazine* information on a large variety of topics, suitable to the capacities of a corresponding variety of readers. Eager curiosity and desire for knowledge, though in themselves good, inasmuch as they mark a vigorous intellect, and may be productive of highly-beneficial results, are yet so often found to operate without subordination to any higher principle, that we cannot be too cautious in selecting food wherewith to appease them. We may injudiciously stimulate the appetite till it can only be satisfied with false and unnatural excitements, or we may with equal ill effect endeavour to allay its cravings with harsh and ungrateful ailment, from which it will turn with disgust. There are subjects which seem at first sight to have little bearing on happiness or virtue, and which will therefore be necessarily excluded from publications of a professedly religious character, yet inasmuch as these subjects are capable of meeting the desire for knowledge in a way that, to say the least, cannot be prejudicial to the moral interest of the reader, and as they may at the same time have a certain effect in refining the taste, enlarging the field of knowledge, or suggesting innocent employment of time, it appears highly injudicious to reject them in a work whose object it is to combine amusement with instruction.

We may here allude to the mode of illustrating the *Saturday Magazine*. Wherever a piece of mechanism, a manufacturing process, a description of a building or country, seemed to require the aid of the pencil to elucidate and illustrate the letter-press description, such illustrations have been given, of sufficient distinctness for the purpose in view, but without any pretension to high artistic excellence. Every one accustomed to the usages of commercial life must be aware that to ensure continuance to a periodical publication, and to fulfil the intentions for which it was established, a remunerating profit must be obtained; without this, the honour may be great, but must be short lived. The cost incidental to the production of highly-finished illustrations is in general incompatible with the permanent success of a work sold at so low a price as ours. The engravings in our Magazine are therefore intended for illustration rather than for decoration. We are contented to take our stand on the general merits of the work, the literature of which has gradually elevated it to a higher place than it was originally intended to occupy among the periodical publications of the day, and gained it an introduction to every class of society.

In looking back on our past course, we are conscious of having presented to our numerous readers a safe and useful miscellany, calculated to lead them onward from simpler to more abstruse knowledge, and to give a wholesome direction to their tastes and feelings. The testimony of correspondents has given us frequent and pleasing confirmation of this belief; and we may here remark, that the information we have received from this source has always been most acceptable; the suggestions conveyed have met with serious attention, and have not been adopted or declined on insufficient grounds. From our limited space, as well as from a desire to avoid controversy and personal feeling or party views, we are not able specially to notice the different communications we are favoured with, yet they are ever regarded as welcome indications of the wishes and opinions of our readers, and, as such, we are glad to have the present opportunity of acknowledging their value.

During the coming year we hope to enter on several new and interesting subjects of inquiry, and where we may hitherto have appeared to slight the communications of any of our readers, it will be seen that they have only been deferred with a view to entering the more fully into them on a future occasion. The treasures of knowledge are inexhaustible; and the chief difficulty consists in making a judicious selection for the benefit of a variety of readers. In this task we shall continue to avail ourselves of the assistance of competent and experienced writers whose time and attention are devoted almost exclusively to the work.

END OF THE VOLUME.

NEW BOOKS AND NEW EDITIONS,

PUBLISHED BY

JOHN W. PARKER, LONDON.

THE LIFE AND CORRESPONDENCE OF THE LATE SIR ASTLEY PASTON COOPER, BART.; from Documents bequeathed by him for the purpose. By BRANSBY B. COOPER, Esq., F.R.S. Two Volumes, Octavo, with Portrait from the Picture by Sir T. Lawrence, P.R.A. *Nearly Ready.*

PRIMITIVE CHRISTIANITY, illustrated by the Acts of the PRIMITIVE CHRISTIANS. By the Right Rev. RICHARD MANT, D.D., Lord Bishop of Down and Connor. Octavo. *Nearly Ready.*

By the same Author,

HISTORY of the CHURCH of IRELAND. Two Volumes, Octavo, 17*s.* each.
A New Edition of the First Volume is now Ready.

A CYCLE of CELESTIAL OBJECTS, being the Result of OBSERVATIONS made at Bedford, arranged in a practical manner for the Use of NAVAL, MILITARY, and PRIVATE OBSERVERS. By Captain W. H. SMYTH, R.N., F.R.S., F. Astron. Soc., &c. Octavo, with Numerous Illustrations. *In the Press.*

NATIONAL PROVERBS, IN THE PRINCIPAL LANGUAGES OF EUROPE. Printed Line for Line in English, French, Italian, Spanish, and German. A small Ornamental Volume. By CAROLINE WARD. *Nearly Ready.*

HYDROLOGY, or The WORLD of WATERS. By Miss R. M. ZORNLIN, Author of *Physical Geography, Recreations in Geology,* &c. *In the Press.*

ESSAYS on NERVOUS DISEASES. By R. B. TODD, M.D., F.R.S., Physician to King's College Hospital, and Professor of Physiology in King's College, London.

THE PHYSIOLOGICAL ANATOMY, and PHYSIOLOGY, of MAN. By R. B. TODD, M.D., F.R.S., and W. BOWMAN, F.R.S., of King's College, London. With Numerous Original Illustrations. *Preparing for the Press.*

THE PUBLIC ECONOMY of ATHENS. By AUGUSTUS BŒCKH, Professor in the University of Berlin. Translated from the German by GEORGE CORNEWALL LEWIS, Esq., A.M., late Student of Christ Church, One of the Translators of MULLER'S *Dorians.* New Edition, Revised. One Volume, Octavo. *In the Press.*

PINDAR'S EPINICIAN ODES, and the FRAGMENTS of HIS LOST COMPOSITIONS; Revised and Explained by the Rev. JOHN WILLIAM DONALDSON, M.A., Head Master of the Bury School. Octavo, 16*s.*

By the same Author,

THE NEW CRATYLUS; or, Contributions towards a more accurate Knowledge of the Greek Language. 17*s.*

BRANDE'S MANUAL of CHEMISTRY; thoroughly Revised and greatly Enlarged; and Incorporating all New Facts and Discoveries in the Science, Foreign as well as British. By WILLIAM THOMAS BRANDE, F.R.S.; of the Royal Mint; Professor of Chemistry in the Royal Institution. The Fifth Edition, (1500 closely printed pages, Octavo,) with numerous Illustrations, 35*s.*

PRINCIPLES OF MECHANISM. By R. WILLIS, M.A., F.R.S., Jacksonian Professor of Natural and Experimental Philosophy in the University of Cambridge. Octavo, with 250 Illustrations, 15*s.*

THE MECHANICS OF ENGINEERING. By the Rev. W. WHEWELL, B.D., F.R.S., Master of Trinity College, and Professor of Moral Philosophy, Cambridge. 9*s.*

By the same Author,

I. THE PHILOSOPHY OF THE INDUCTIVE SCIENCES, Founded upon their History. Two Volumes, Octavo, 30*s.*

II. A HISTORY OF THE INDUCTIVE SCIENCES, from the Earliest Times to the Present. Three Volumes, Octavo, 2*l.* 2*s.*

III. On the PRINCIPLES of ENGLISH UNIVERSITY EDUCATION. 5*s.*

IV. THE MECHANICAL EUCLID. 5*s.* 6*d.*

V. THE DOCTRINE OF LIMITS, with Applications. 9*s.*

VI. ON THE FOUNDATIONS OF MORALS. 3*s.* 6*d.*

THE ELEMENTS OF DESCRIPTIVE GEOMETRY. By the Rev. T. G. HALL, M.A., Professor of Mathematics in King's College, London. Eighty Illustrations, 6*s.* 6*d.*

By the same Author,

I. THE ELEMENTS OF ALGEBRA. 6*s.* 6*d.*

II. A TREATISE on the DIFFERENTIAL and INTEGRAL CALCULUS. Third Edition, 12*s.* 6*d.*

EXAMPLES of the PROCESSES of the DIFFERENTIAL and INTEGRAL CALCULUS. Collected by D. F. GREGORY, M.A., Fellow of Trinity College. Octavo, 18*s.*

THE UNDULATORY THEORY, as APPLIED to the DISPERSION of LIGHT; including the Substance of several Papers, printed in the Philosophical Transactions, and other Journals. By the Rev. BADEN POWELL, M.A., F.R.S., F.R.A.S., F.G.S., Savilian Professor in the University of Oxford. Octavo, 9*s.*

A PRACTICAL ARABIC GRAMMAR. By DUNCAN STEWART, Esq. Octavo, 16*s.*

LECTURES in DIVINITY, delivered in the University of Cambridge, by JOHN HEY, D.D., as Norrissian Professor, from 1780 to 1795. *A New Edition, Revised, in Two Large Volumes, Octavo,* 30*s.*

COMMENTS, EXPLANATORY and PRACTICAL, upon the EPISTLES for the Sundays, Fasts, and Holidays throughout the Year; for the use of Families. By the Rev. J. F. HONE, M.A., Vicar of Tirley, Gloucester. *Nearly Ready.*

LONDON: JOHN W. PARKER, PUBLISHER, WEST STRAND.

89094395738

B89094395738A

B9094395738

b89094395738a